

@[Dror Bar-Natan](http://www.math.toronto.edu/~drorbn/) + [\\_](http://www.math.toronto.edu/~drorbn/) [@Classes](http://www.math.toronto.edu/~drorbn/classes/) + [\\_](http://www.math.toronto.edu/~drorbn/classes/) [@2021-22](http://www.math.toronto.edu/~drorbn/classes/#2122) + [\\_](http://www.math.toronto.edu/~drorbn/classes/#2122)

**Disclaimers** . This will be a lousy year! Hopefully better than last, yet worse than the one before and the one that will follow. We will all work more than in an ordinary year, but achieve less. Expect mishaps! Everything on the MAT 257 web pages remains tentative until it had happened. The Evil Virus situation may force us to make last minute changes to anything.

**Agenda.** Adult-Level Calculus; especially

$$\int_M d\omega = \int_{\partial M} \omega.$$

**Instructor.** [Dror Bar-Natan](http://www.math.toronto.edu/~drorbn/) +

[\\_](http://www.math.toronto.edu/~drorbn/),

[drorbn@math.toronto.edu](mailto:drorbn@math.toronto.edu)

[\\_](mailto:drorbn@math.toronto.edu) (for course administration matters only; math on email is slow and prone to misunderstandings, so I generally avoid it). Office: Bahen 6178 (I truly hope it will make sense to return there...).

**Teaching Assistants.** Sebastian Gherghe ([sebastian.gherghe@mail.utoronto.ca](mailto:sebastian.gherghe@mail.utoronto.ca)

[\\_](mailto:sebastian.gherghe@mail.utoronto.ca)), Jessica Liu ([chengjin.liu@mail.utoronto.ca](mailto:chengjin.liu@mail.utoronto.ca)

[\\_](mailto:chengjin.liu@mail.utoronto.ca)), and Shuyang Shen ([shuyang.shen@mail.utoronto.ca](mailto:shuyang.shen@mail.utoronto.ca)

[\\_](mailto:shuyang.shen@mail.utoronto.ca)).

**Classes.** Mondays, Wednesdays and Fridays 9-10AM at SF1101 (when possible) or at <http://drorbn.net/vclass>

+ [\\_](http://drorbn.net/vclass) (otherwise).

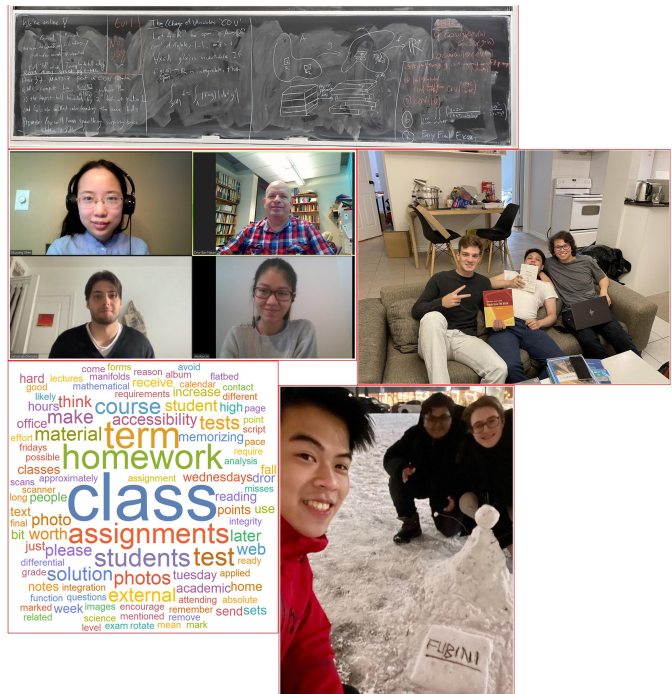
**Office Hours.** With Dror on Tuesdays 9:30-10:30 at BA6178 and at <http://drorbn.net/vchat> + [\\_](http://drorbn.net/vchat) (notes: [PDF](http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/2122-257-OfficeHoursNotes.pdf) + [\\_](http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/2122-257-OfficeHoursNotes.pdf)) and with Shuyang on Thursdays at 1-2pm at <https://utoronto.zoom.us/j/83428997680> + [\\_](https://utoronto.zoom.us/j/83428997680) (password vchat).

## Tutorials

- Wednesdays 5-6 with Jessica Liu at RW142 when possible and at <https://utoronto.zoom.us/j/82408624070> + [\\_](https://utoronto.zoom.us/j/82408624070) (password vchat) otherwise.
- Thursdays 10-11 with Shuyang Shen at SS2111 when possible and at <https://utoronto.zoom.us/j/83428997680> + [\\_](https://utoronto.zoom.us/j/83428997680) (password vchat) otherwise.
- Thursdays 4-5 with Sebastian Gherghe at BL114 when possible and at <https://utoronto.zoom.us/j/87218810932> + [\\_](https://utoronto.zoom.us/j/87218810932) (password vchat) otherwise.

**Recordings.** For the first two weeks of the Fall Semester, classes and tutorials will be videotaped and will be made available on this page.

**Text.** Our primary text will be "Little Spivak" - M. Spivak, *Calculus on Manifolds*. See more at [About This Class](https://q.utoronto.ca/courses/237801/pages/about-this-class) [\\_](https://q.utoronto.ca/courses/237801/pages/about-this-class).



Piazza Link. <https://piazza.com/utoronto.ca/fall2021/mat257> + [.\(https://piazza.com/utoronto.ca/fall2021/mat257\)](https://piazza.com/utoronto.ca/fall2021/mat257)

## Course Calendar

#	Week of ...	
1	September 6	<p>UofT classes begin on Thursday September 10 and our first class is on Friday September 11. Tutorials will only start next week.</p> <p>Handout: <a href="https://q.utoronto.ca/courses/237801/pages/about-this-class">About This Class (https://q.utoronto.ca/courses/237801/pages/about-this-class)</a>.</p> <p>Friday's class: Course intro, inner products, norms. Videos: <a href="https://play.library.utoronto.ca/watch/4d53c241cf8a7e28520c6a8a765d253f">SD+ (https://play.library.utoronto.ca/watch/4d53c241cf8a7e28520c6a8a765d253f)</a>, <a href="https://play.library.utoronto.ca/watch/ef2a7ee4921bc6b8add5e0d2b4a2ef75">HD+ (https://play.library.utoronto.ca/watch/ef2a7ee4921bc6b8add5e0d2b4a2ef75)</a>.</p>
2	September 13	<p>Monday's class: Administrative details, more on inner products and norms. Videos: <a href="https://play.library.utoronto.ca/watch/c75c3310b738ac1983a6d06b676cd3a7">SD+ (https://play.library.utoronto.ca/watch/c75c3310b738ac1983a6d06b676cd3a7)</a>, <a href="https://play.library.utoronto.ca/watch/04274a515f2d1c56458343f827f68cd6">HD+ (https://play.library.utoronto.ca/watch/04274a515f2d1c56458343f827f68cd6)</a>.</p> <p>Wednesday's class: Linear transformations and matrices, rectangles in <math>\mathbb{R}^n</math>. Videos: <a href="https://play.library.utoronto.ca/watch/4a1419ef11414145a80ad11f1c253da9">SD+ (https://play.library.utoronto.ca/watch/4a1419ef11414145a80ad11f1c253da9)</a>, <a href="https://play.library.utoronto.ca/watch/33941e77b03b7aefcbaa5b6b934d2697">HD+ (https://play.library.utoronto.ca/watch/33941e77b03b7aefcbaa5b6b934d2697)</a>.</p> <p>Wednesday's tutorial with Jessica: <a href="https://play.library.utoronto.ca/watch/1ef1ff3298392807c3292a90168d58f6">SD+ (https://play.library.utoronto.ca/watch/1ef1ff3298392807c3292a90168d58f6)</a>, <a href="https://play.library.utoronto.ca/watch/02bdcdc98b81ef86d8772d464f0bb515">HD+ (https://play.library.utoronto.ca/watch/02bdcdc98b81ef86d8772d464f0bb515)</a> (the videos are incomplete due to a memory card mishap; sorry).</p> <p>Thursday's tutorial with Shuyang: <a href="https://play.library.utoronto.ca/watch/fdb560cea5890c405cfea00e8c996b82">SD+ (https://play.library.utoronto.ca/watch/fdb560cea5890c405cfea00e8c996b82)</a>, <a href="https://play.library.utoronto.ca/watch/e69a02d9f2bbbd4cef2c79e6e099ba1a">HD+ (https://play.library.utoronto.ca/watch/e69a02d9f2bbbd4cef2c79e6e099ba1a)</a>.</p> <p>Thursday's tutorial with Sebastian: <a href="https://play.library.utoronto.ca/watch/74fcb5db9753816d8f26b9c740859dab">SD+ (https://play.library.utoronto.ca/watch/74fcb5db9753816d8f26b9c740859dab)</a>, <a href="https://play.library.utoronto.ca/watch/7e640add16be42eb9ef1959bcdcf189dc">HD+ (https://play.library.utoronto.ca/watch/7e640add16be42eb9ef1959bcdcf189dc)</a>.</p> <p>HW1 is on Crowdmark, with a PDF copy <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW01.pdf">here+ (http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW01.pdf)</a>. It was due on Friday September 24 at 11:59PM. Solutions sets (<a href="https://q.utoronto.ca/courses/237801/pages/solution-sets-warning">warning (https://q.utoronto.ca/courses/237801/pages/solution-sets-warning)</a>): <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW01Sol1.pdf">HW01Sol1+ (http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW01Sol1.pdf)</a>.</p> <p>Friday's class: Open and closed sets. Videos: <a href="https://play.library.utoronto.ca/watch/eb210223af8cadd67d211a35a94ca052">SD+ (https://play.library.utoronto.ca/watch/eb210223af8cadd67d211a35a94ca052)</a>, <a href="https://play.library.utoronto.ca/watch/28b51106592ff6986f87f73b96167271">HD+ (https://play.library.utoronto.ca/watch/28b51106592ff6986f87f73b96167271)</a>.</p>
3	September 20	<p>Monday's class: Interior, exterior, closure, boundary. Compactness and Heine-Borel. Videos: <a href="https://play.library.utoronto.ca/watch/ace8e16f80f69693ebec3905c370901f">SD+ (https://play.library.utoronto.ca/watch/ace8e16f80f69693ebec3905c370901f)</a>, <a href="https://play.library.utoronto.ca/watch/8e59665c8f66a043595ca9e0f7a448a1">HD+ (https://play.library.utoronto.ca/watch/8e59665c8f66a043595ca9e0f7a448a1)</a>.</p>

#	Week of ...	
		<p>Wednesday's class: Compactness of products, compactness in <math>\mathbb{R}^n</math>. Videos: <a href="https://play.library.utoronto.ca/watch/8347c70ee1fd0787d57ada9ed3b79d62">SD+</a> <a href="https://play.library.utoronto.ca/watch/8347c70ee1fd0787d57ada9ed3b79d62">. (https://play.library.utoronto.ca/watch/8347c70ee1fd0787d57ada9ed3b79d62)</a>, <a href="https://play.library.utoronto.ca/watch/bbd9f51c8631a9c591fa09b0c0f3ff14">HD+</a> <a href="https://play.library.utoronto.ca/watch/bbd9f51c8631a9c591fa09b0c0f3ff14">. (https://play.library.utoronto.ca/watch/bbd9f51c8631a9c591fa09b0c0f3ff14)</a>.</p> <p>Wednesday's tutorial with Jessica: <a href="https://play.library.utoronto.ca/watch/b43aa91fee208c78a10990af44849190">SD+</a> <a href="https://play.library.utoronto.ca/watch/b43aa91fee208c78a10990af44849190">. (https://play.library.utoronto.ca/watch/b43aa91fee208c78a10990af44849190)</a>, <a href="https://play.library.utoronto.ca/watch/fd17e901e2bfe6cfb07df22e361b3b82">HD+</a> <a href="https://play.library.utoronto.ca/watch/fd17e901e2bfe6cfb07df22e361b3b82">. (https://play.library.utoronto.ca/watch/fd17e901e2bfe6cfb07df22e361b3b82)</a>.</p> <p>Friday's class: Functions and continuity. Videos: <a href="https://play.library.utoronto.ca/watch/fb0469f3403357716d6b01e110d30c9f">SD+</a> <a href="https://play.library.utoronto.ca/watch/fb0469f3403357716d6b01e110d30c9f">. (https://play.library.utoronto.ca/watch/fb0469f3403357716d6b01e110d30c9f)</a>, <a href="https://play.library.utoronto.ca/watch/7151260567e09e2222fdae08cb764db8">HD+</a> <a href="https://play.library.utoronto.ca/watch/7151260567e09e2222fdae08cb764db8">. (https://play.library.utoronto.ca/watch/7151260567e09e2222fdae08cb764db8)</a>.</p> <p>Thursday's tutorial with Shuyang: <a href="https://play.library.utoronto.ca/watch/0f0fea88928e9901bf0089dd137feb29">SD+</a> <a href="https://play.library.utoronto.ca/watch/0f0fea88928e9901bf0089dd137feb29">. (https://play.library.utoronto.ca/watch/0f0fea88928e9901bf0089dd137feb29)</a>, <a href="https://play.library.utoronto.ca/watch/fb3eaf8a812c48017ccf1a7357c7d29d">HD+</a> <a href="https://play.library.utoronto.ca/watch/fb3eaf8a812c48017ccf1a7357c7d29d">. (https://play.library.utoronto.ca/watch/fb3eaf8a812c48017ccf1a7357c7d29d)</a>.</p> <p>Thursday's tutorial with Sebastian: <a href="https://play.library.utoronto.ca/watch/58a2b80294e0bc0a78c964f0bd317f6e">SD+</a> <a href="https://play.library.utoronto.ca/watch/58a2b80294e0bc0a78c964f0bd317f6e">. (https://play.library.utoronto.ca/watch/58a2b80294e0bc0a78c964f0bd317f6e)</a>, <a href="https://play.library.utoronto.ca/watch/ce896b44b21d3e626e1fcb9348c9a3c2">HD+</a> <a href="https://play.library.utoronto.ca/watch/ce896b44b21d3e626e1fcb9348c9a3c2">. (https://play.library.utoronto.ca/watch/ce896b44b21d3e626e1fcb9348c9a3c2)</a>.</p> <p>HW2 is on Crowdmark, with a PDF copy <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW02.pdf">here+</a> <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW02.pdf">. (http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW02.pdf)</a>. It was due on Friday October 1 at 11:59PM. Solutions sets (<a href="https://q.utoronto.ca/courses/237801/pages/solution-sets-warning">warning (https://q.utoronto.ca/courses/237801/pages/solution-sets-warning)</a>): <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW02Sol1.pdf">HW02Sol1+</a> <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW02Sol1.pdf">. (http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW02Sol1.pdf)</a>.</p>
4	September 27	<p>Monday's class: Continuity and differentiability. Videos: <a href="https://play.library.utoronto.ca/watch/3abda76a955dab79d5ec368751ff624c">SD+</a> <a href="https://play.library.utoronto.ca/watch/3abda76a955dab79d5ec368751ff624c">. (https://play.library.utoronto.ca/watch/3abda76a955dab79d5ec368751ff624c)</a>, <a href="https://play.library.utoronto.ca/watch/5b39a816956a64c25be4966e2a4e2226">HD+</a> <a href="https://play.library.utoronto.ca/watch/5b39a816956a64c25be4966e2a4e2226">. (https://play.library.utoronto.ca/watch/5b39a816956a64c25be4966e2a4e2226)</a>.</p> <p>Wednesday's class: The differential. Videos: <a href="https://play.library.utoronto.ca/watch/d7769a389980db3c2b343f5780b64ba6">SD+</a> <a href="https://play.library.utoronto.ca/watch/d7769a389980db3c2b343f5780b64ba6">. (https://play.library.utoronto.ca/watch/d7769a389980db3c2b343f5780b64ba6)</a>, <a href="https://play.library.utoronto.ca/watch/13377d67ce3a03e5e5f2bd1fed7d65c6">HD+</a> <a href="https://play.library.utoronto.ca/watch/13377d67ce3a03e5e5f2bd1fed7d65c6">. (https://play.library.utoronto.ca/watch/13377d67ce3a03e5e5f2bd1fed7d65c6)</a>.</p> <p>Friday's class: The chain rule. Videos: <a href="https://play.library.utoronto.ca/watch/9a35692cb9d831c7162625c3fe53830b">SD+</a> <a href="https://play.library.utoronto.ca/watch/9a35692cb9d831c7162625c3fe53830b">. (https://play.library.utoronto.ca/watch/9a35692cb9d831c7162625c3fe53830b)</a>, <a href="https://play.library.utoronto.ca/watch/88fef21ff37dde1c2ea4cfa1c4d531d1">HD+</a> <a href="https://play.library.utoronto.ca/watch/88fef21ff37dde1c2ea4cfa1c4d531d1">. (https://play.library.utoronto.ca/watch/88fef21ff37dde1c2ea4cfa1c4d531d1)</a>.</p> <p>HW3 is on Crowdmark, with a PDF copy <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW03.pdf">here+</a> <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW03.pdf">. (http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW03.pdf)</a>. It was due on Friday October 8 at 11:59PM. Solutions sets (<a href="https://q.utoronto.ca/courses/237801/pages/solution-sets-warning">warning (https://q.utoronto.ca/courses/237801/pages/solution-sets-warning)</a>): <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW03Sol1.pdf">HW03Sol1+</a> <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW03Sol1.pdf">. (http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW03Sol1.pdf)</a>.</p>
5	October 4	<p>Monday's class: The chain rule and division. Videos: <a href="https://play.library.utoronto.ca/watch/2207e5ef979222958cff1593f9e56fd7">SD+</a> <a href="https://play.library.utoronto.ca/watch/2207e5ef979222958cff1593f9e56fd7">. (https://play.library.utoronto.ca/watch/2207e5ef979222958cff1593f9e56fd7)</a>, <a href="https://play.library.utoronto.ca/watch/2546d8ae2c02d6191beca8e942c6d1ab">HD+</a> <a href="https://play.library.utoronto.ca/watch/2546d8ae2c02d6191beca8e942c6d1ab">. (https://play.library.utoronto.ca/watch/2546d8ae2c02d6191beca8e942c6d1ab)</a>.</p> <p>Wednesday's class: Partial derivatives: <a href="https://play.library.utoronto.ca/watch/9d18c2f1393e75e9b0411fa742960c3d">SD+</a> <a href="https://play.library.utoronto.ca/watch/9d18c2f1393e75e9b0411fa742960c3d">. (https://play.library.utoronto.ca/watch/9d18c2f1393e75e9b0411fa742960c3d)</a>, <a href="https://play.library.utoronto.ca/watch/">HD+</a> <a href="https://play.library.utoronto.ca/watch/">. (https://play.library.utoronto.ca/watch/)</a>.</p>

#	Week of ...	
		<p><a href="#">/cc757e729dd3c8d7f8cad5ab94b9ac56</a>).</p> <p>Friday's class: Partial derivatives and differentiability: <a href="#">SD</a> + <a href="https://play.library.utoronto.ca/watch/d0f7627242837c23e4e61cec4d166e2c">_(https://play.library.utoronto.ca/watch/d0f7627242837c23e4e61cec4d166e2c)</a>_, <a href="#">HD</a> + <a href="https://play.library.utoronto.ca/watch/28c320193d365fbc120427406526f27">_(https://play.library.utoronto.ca/watch/28c320193d365fbc120427406526f27)</a>).</p> <p>HW4 is on Crowdmark, with a PDF copy <a href="#">here</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW04.pdf">_(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW04.pdf)</a>_. It was due on Friday October 15 at 11:59PM. Solutions sets (<a href="https://q.utoronto.ca/courses/237801/pages/solution-sets-warning">warning (https://q.utoronto.ca/courses/237801/pages/solution-sets-warning)</a>): <a href="#">HW04Sol1</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW04Sol1.pdf">_(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW04Sol1.pdf)</a>_.</p>
6	October 11	<p>Monday is Thanksgiving; no class.</p> <p>Dror's office hour on Tuesday is an hour late, at 10:30-11:30.</p> <p>Wednesday's class: The Inverse Function Theorem (1): <a href="#">SD</a> + <a href="https://play.library.utoronto.ca/watch/e0c409ba0e4db83573ceab651bc24ff8">_(https://play.library.utoronto.ca/watch/e0c409ba0e4db83573ceab651bc24ff8)</a>_, <a href="#">HD</a> + <a href="https://play.library.utoronto.ca/watch/bf8f7884cbd274ca875f80cc3d9f8e46">_(https://play.library.utoronto.ca/watch/bf8f7884cbd274ca875f80cc3d9f8e46)</a>).</p> <p>Friday's class: The Inverse Function Theorem (2): <a href="#">SD</a> + <a href="https://play.library.utoronto.ca/watch/05ddb0a3c1c190d8311dddce62f458a2">_(https://play.library.utoronto.ca/watch/05ddb0a3c1c190d8311dddce62f458a2)</a>_, <a href="#">HD</a> + <a href="https://play.library.utoronto.ca/watch/32391abf1d60e4f693f27474b4987dd0">_(https://play.library.utoronto.ca/watch/32391abf1d60e4f693f27474b4987dd0)</a>).</p> <p>HW5 is on Crowdmark, with a PDF copy <a href="#">here</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW05.pdf">_(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW05.pdf)</a>_. It was due on Friday October 22 at 11:59PM. Solutions sets (<a href="https://q.utoronto.ca/courses/237801/pages/solution-sets-warning">warning (https://q.utoronto.ca/courses/237801/pages/solution-sets-warning)</a>): <a href="#">HW05Sol1</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW05Sol1.pdf">_(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW05Sol1.pdf)</a>_.</p>
7	October 18	<p>Monday's class: The Inverse Function Theorem (3).</p> <p>Wednesday's class: The Implicit Function Theorem.</p> <p>Friday's class: Partitions, lower sums, upper sums.</p> <p>HW6 is on Crowdmark, with a PDF copy <a href="#">here</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW06.pdf">_(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW06.pdf)</a>_. It was due on Friday October 29 at 11:59PM. Solutions sets (<a href="https://q.utoronto.ca/courses/237801/pages/solution-sets-warning">warning (https://q.utoronto.ca/courses/237801/pages/solution-sets-warning)</a>): <a href="#">HW06Sol1</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW06Sol1.pdf">_(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW06Sol1.pdf)</a>_.</p>
8	October 25	<p>Monday's class: The definition of the integral.</p> <p>Wednesday's class: Continuous functions are integrable, countability.</p> <p>Friday's class: Countability and measure-0.</p>
9	November 1	<p>Monday's class: Continuous except measure 0 implies integrable.</p> <p><a href="#">Term Test 1</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/2122-257-TT1.pdf">_(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/2122-257-TT1.pdf)</a>_, was on Tuesday at 5-7PM. Solutions sets (<a href="https://q.utoronto.ca/courses">warning (https://q.utoronto.ca/courses</a></p>

#	Week of ...	
		<p><a href="https://q.utoronto.ca/courses/237801/pages/solution-sets-warning">/237801/pages/solution-sets-warning</a>): <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/TT1Sol1.pdf">TT1Sol1</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/TT1Sol1.pdf">_(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/TT1Sol1.pdf)</a>.</p> <p>Wednesday's class: Integrable implies continuous except on measure 0.</p> <p>Friday's class: Fubini's Theorem.</p>
R	November 8	<p>Reading Week - no classes, no tutorials, no office hours.</p> <p>HW7 is on Crowdmark, with a PDF copy <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW07.pdf">here</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW07.pdf">_(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW07.pdf)</a>. It was due on Friday November 19 at 11:59PM. Solutions sets (<a href="https://q.utoronto.ca/courses/237801/pages/solution-sets-warning">warning (https://q.utoronto.ca/courses/237801/pages/solution-sets-warning)</a>): <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW07Sol1.pdf">HW07Sol1</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW07Sol1.pdf">_(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW07Sol1.pdf)</a>.</p>
10	November 15	<p>Monday's class: Proof of Fubini.</p> <p>Wednesday's class: Introduction to Partitions of Unity (PO1).</p> <p>Friday's class: PO1 (2), the <math>C^\infty</math> Lego pieces and flat-top mountains. Mathematica notebook: <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/nb/SmoothLego@.pdf">SmoothLego@.pdf</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/nb/SmoothLego@.nb">_(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/nb/SmoothLego@.pdf)</a>, <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SmoothLego@.nb">SmoothLego@.nb</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SmoothLego@.nb">_(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SmoothLego@.nb)</a>.</p> <p>HW8 is on Crowdmark, with a PDF copy <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW08.pdf">here</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW08.pdf">_(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW08.pdf)</a>. It was due on Friday November 26 at 11:59PM. Solutions sets (<a href="https://q.utoronto.ca/courses/237801/pages/solution-sets-warning">warning (https://q.utoronto.ca/courses/237801/pages/solution-sets-warning)</a>): <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW08Sol1.pdf">HW08Sol1</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW08Sol1.pdf">_(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW08Sol1.pdf)</a>.</p>
11	November 22	<p>Monday's class: PO1 (3).</p> <p>Wednesday's class: PO1 (4).</p> <p>Friday's class: Integration NT (1).</p> <p>HW9 is on Crowdmark, with a PDF copy <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW09.pdf">here</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW09.pdf">_(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW09.pdf)</a>. It was due on Friday December 3 at 11:59PM. Solutions sets (<a href="https://q.utoronto.ca/courses/237801/pages/solution-sets-warning">warning (https://q.utoronto.ca/courses/237801/pages/solution-sets-warning)</a>): <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW09Sol1.pdf">HW09Sol1</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW09Sol1.pdf">_(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW09Sol1.pdf)</a>.</p>
12	November 29	<p>Monday's class: Integration NT (2).</p> <p>Wednesday's class: Integration NT (3).</p> <p>Friday's class: Integration NT (4).</p> <p>HW10 is on Crowdmark, with a PDF copy <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW10.pdf">here</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW10.pdf">_(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW10.pdf)</a>. It was due on Thursday December 9 at 11:59PM. Solutions sets (<a href="https://q.utoronto.ca/courses/237801/pages/solution-sets-warning">warning (https://q.utoronto.ca/courses/237801/pages/solution-sets-warning)</a>): <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW10Sol1.pdf">HW10Sol1</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW10Sol1.pdf">_(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW10Sol1.pdf)</a>, <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW10Sol2.pdf">HW10Sol2</a></p>



#	Week of ...	
		+ <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW10Sol2.pdf">_(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW10Sol2.pdf)_</a> .
13	December 6	<p>Monday's class: The Change of Variables (COV) Theorem.</p> <p>Wednesday's class: Some debts, volumes of spheres and balls. See the <a href="#">1206 riddle</a>+ <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/nb/1206.pdf">_(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/nb/1206.pdf)_</a>.</p> <p>Thursday class, UofT's "Makeup Day": Dror's Favourite First-Year Analysis Theorem following <a href="http://drorbn.net/maa18">http://drorbn.net/maa18</a>+ <a href="http://drorbn.net/maa18">_(http://drorbn.net/maa18)_</a>. Videos: <a href="#">SD</a>+ <a href="https://play.library.utoronto.ca/watch/cb2e3fc2b3db906a8002360d003006e6">_(https://play.library.utoronto.ca/watch/cb2e3fc2b3db906a8002360d003006e6)_</a>, <a href="#">HD</a>+ <a href="https://play.library.utoronto.ca/watch/9dc4f5b0df02cdfa0a6736679bcc7928">_(https://play.library.utoronto.ca/watch/9dc4f5b0df02cdfa0a6736679bcc7928)_</a>.</p>
FF1	December 13	Fall Final Assessments.
FF2	December 20	Fall Final Assessments end on Tuesday.
14	January 10	<p>Classes are online! at <a href="http://drorbn.net/vclass">http://drorbn.net/vclass</a>+ <a href="http://drorbn.net/vclass">_(http://drorbn.net/vclass)_</a>.</p> <p>Monday's class: Sketch of the proof of the COV formula. Videos: <a href="#">SD</a>+ <a href="https://play.library.utoronto.ca/watch/ba3f1a9969004ddaa4c44e47a40003bb">_(https://play.library.utoronto.ca/watch/ba3f1a9969004ddaa4c44e47a40003bb)_</a>, <a href="#">HD</a>+ <a href="https://play.library.utoronto.ca/watch/ba5a145c0e5a5abd0d5c4a6660731f57">_(https://play.library.utoronto.ca/watch/ba5a145c0e5a5abd0d5c4a6660731f57)_</a>.</p> <p>Wednesday's class: Proof of the COV formula (2). Videos: <a href="#">SD</a>+ <a href="https://play.library.utoronto.ca/watch/ffe10a1ec991225e8685bc321a11af45">_(https://play.library.utoronto.ca/watch/ffe10a1ec991225e8685bc321a11af45)_</a>, <a href="#">HD</a>+ <a href="https://play.library.utoronto.ca/watch/4329220c8dada9395608a4d96908a090">_(https://play.library.utoronto.ca/watch/4329220c8dada9395608a4d96908a090)_</a>.</p> <p>Wednesday's tutorial with Jessica: <a href="#">PDF</a>+ <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/Tutorial-220112-Jessica.pdf">_(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/Tutorial-220112-Jessica.pdf)_</a>.</p> <p>Thursday's tutorial with Shuyang: <a href="#">PDF</a>+ <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/Tutorial-220113-Shuyang.pdf">_(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/Tutorial-220113-Shuyang.pdf)_</a>.</p> <p>Thursday's tutorial with Sebastian: <a href="#">PDF</a>+ <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/Tutorial-220113-Sebastian.pdf">_(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/Tutorial-220113-Sebastian.pdf)_</a>.</p> <p>Friday's class: Proof of the COV formula (3). Videos: <a href="#">SD</a>+ <a href="https://play.library.utoronto.ca/watch/f36c785531d3cf3d607e251ad58754ce">_(https://play.library.utoronto.ca/watch/f36c785531d3cf3d607e251ad58754ce)_</a>, <a href="#">HD</a>+ <a href="https://play.library.utoronto.ca/watch/58c565d425ab878bd3c0d607a4da84f8">_(https://play.library.utoronto.ca/watch/58c565d425ab878bd3c0d607a4da84f8)_</a>.</p> <p>This week's in-class notes are <a href="#">here</a>+ <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/2122-257-Week_14_In-Class_Notes.pdf">_(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/2122-257-Week_14_In-Class_Notes.pdf)_</a>.</p>
15	January 17	<p>Monday's class: Proof of the COV formula (4). Videos: <a href="#">SD</a>+ <a href="https://play.library.utoronto.ca/watch/ab1ed3e0e08fda4d9e1bc73ef1a32440">_(https://play.library.utoronto.ca/watch/ab1ed3e0e08fda4d9e1bc73ef1a32440)_</a>, <a href="#">HD</a>+ <a href="https://play.library.utoronto.ca/watch/69d2da88a4c6f556f7349ef99dab3173">_(https://play.library.utoronto.ca/watch/69d2da88a4c6f556f7349ef99dab3173)_</a>.</p> <p><a href="#">Term Test 2</a>+ <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/2122-257-TT2.pdf">_(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/2122-257-TT2.pdf)_</a> was on Tuesday at 5-7PM. Solutions sets (<a href="#">warning</a> <a href="https://q.utoronto.ca/courses">_(https://q.utoronto.ca/courses</a></p>

#	Week of ...	
		<p><a href="https://q.utoronto.ca/courses/237801/pages/solution-sets-warning">/237801/pages/solution-sets-warning</a>): <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/TT2Sol1.pdf">TT2Sol1</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/TT2Sol1.pdf">_(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/TT2Sol1.pdf)</a>.</p> <p>Wednesday's class: Coordinate swaps, Sard's Theorem. Videos: <a href="https://play.library.utoronto.ca/watch/d2c0bc5af060230a42991240e985065f">SD</a> + <a href="https://play.library.utoronto.ca/watch/d2c0bc5af060230a42991240e985065f">_(https://play.library.utoronto.ca/watch/d2c0bc5af060230a42991240e985065f)</a>, <a href="https://play.library.utoronto.ca/watch/6f2aa5e2024de4a3be4e7f8ab83a02c4">HD</a> + <a href="https://play.library.utoronto.ca/watch/6f2aa5e2024de4a3be4e7f8ab83a02c4">_(https://play.library.utoronto.ca/watch/6f2aa5e2024de4a3be4e7f8ab83a02c4)</a>.</p> <p>Wednesday's tutorial with Jessica: <a href="https://q.utoronto.ca/courses/237801/files/18678207?wrap=1">PDF</a> <a href="https://q.utoronto.ca/courses/237801/files/18678207?wrap=1">_(https://q.utoronto.ca/courses/237801/files/18678207?wrap=1)</a> ↓ <a href="https://q.utoronto.ca/courses/237801/files/18678207/download?download_frd=1">_(https://q.utoronto.ca/courses/237801/files/18678207/download?download_frd=1)</a> .</p> <p>Thursday's tutorial with Shuyang: <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/Tutorial-220120-Shuyang.pdf">PDF</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/Tutorial-220120-Shuyang.pdf">_(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/Tutorial-220120-Shuyang.pdf)</a> .</p> <p>Thursday's tutorial with Sebastian: <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/Tutorial-220120-Sebastian.pdf">PDF</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/Tutorial-220120-Sebastian.pdf">_(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/Tutorial-220120-Sebastian.pdf)</a> .</p> <p>Friday's class: k-tensors. Videos: <a href="https://play.library.utoronto.ca/watch/bdbe87615ad59733cf21011b504d58f8">SD</a> + <a href="https://play.library.utoronto.ca/watch/bdbe87615ad59733cf21011b504d58f8">_(https://play.library.utoronto.ca/watch/bdbe87615ad59733cf21011b504d58f8)</a>, <a href="https://play.library.utoronto.ca/watch/cddc2d4846da22999531027f3c6ed8b4">HD</a> + <a href="https://play.library.utoronto.ca/watch/cddc2d4846da22999531027f3c6ed8b4">_(https://play.library.utoronto.ca/watch/cddc2d4846da22999531027f3c6ed8b4)</a> .</p> <p>This week's in-class notes are <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/2122-257-Week_15_In-Class_Notes.pdf">here</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/2122-257-Week_15_In-Class_Notes.pdf">_(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/2122-257-Week_15_In-Class_Notes.pdf)</a> .</p> <p>HW11 is on Crowdmark, with a PDF copy <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW11.pdf">here</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW11.pdf">_(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW11.pdf)</a> . It was due on Friday January 28 at 11:59PM. Solutions sets (<a href="https://q.utoronto.ca/courses/237801/pages/solution-sets-warning">warning</a> <a href="https://q.utoronto.ca/courses/237801/pages/solution-sets-warning">_(https://q.utoronto.ca/courses/237801/pages/solution-sets-warning)</a>): <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW11Sol1.pdf">HW11Sol1</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW11Sol1.pdf">_(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW11Sol1.pdf)</a>, <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW11Sol2.pdf">HW11Sol2</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW11Sol2.pdf">_(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW11Sol2.pdf)</a> .</p>
16	January 24	<p>Monday's class: A basis for k-tensors. Videos: <a href="https://play.library.utoronto.ca/watch/caba10b77f658776115054c16bbe442b">SD</a> + <a href="https://play.library.utoronto.ca/watch/caba10b77f658776115054c16bbe442b">_(https://play.library.utoronto.ca/watch/caba10b77f658776115054c16bbe442b)</a>, <a href="https://play.library.utoronto.ca/watch/143d4eb8e086042befb5d2e233df5c97">HD</a> + <a href="https://play.library.utoronto.ca/watch/143d4eb8e086042befb5d2e233df5c97">_(https://play.library.utoronto.ca/watch/143d4eb8e086042befb5d2e233df5c97)</a> .</p> <p>Wednesday's class: Pushing and pulling. Videos: <a href="https://play.library.utoronto.ca/watch/089b9ad94f94882e927ded835c7d1260">SD</a> + <a href="https://play.library.utoronto.ca/watch/089b9ad94f94882e927ded835c7d1260">_(https://play.library.utoronto.ca/watch/089b9ad94f94882e927ded835c7d1260)</a>, <a href="https://play.library.utoronto.ca/watch/1adf73095c5fd584d58096dc97d9646d">HD</a> + <a href="https://play.library.utoronto.ca/watch/1adf73095c5fd584d58096dc97d9646d">_(https://play.library.utoronto.ca/watch/1adf73095c5fd584d58096dc97d9646d)</a> .</p> <p>Wednesday's tutorial with Jessica: <a href="https://q.utoronto.ca/courses/237801/files/18810624?wrap=1">PDF</a> <a href="https://q.utoronto.ca/courses/237801/files/18810624?wrap=1">_(https://q.utoronto.ca/courses/237801/files/18810624?wrap=1)</a> ↓ <a href="https://q.utoronto.ca/courses/237801/files/18810624/download?download_frd=1">_(https://q.utoronto.ca/courses/237801/files/18810624/download?download_frd=1)</a> .</p> <p>Thursday's tutorial with Shuyang: <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/Tutorial-220127-Shuyang.pdf">PDF</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/Tutorial-220127-Shuyang.pdf">_(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/Tutorial-220127-Shuyang.pdf)</a> .</p> <p>Thursday's tutorial with Sebastian: <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/Tutorial-220127-Sebastian.pdf">PDF</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/Tutorial-220127-Sebastian.pdf">_(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/Tutorial-220127-Sebastian.pdf)</a> .</p> <p>Friday's class: alternating k-tensors. Videos: <a href="https://play.library.utoronto.ca/watch/06509f1aa30f5e6951d43c2f52c34479">SD</a> + <a href="https://play.library.utoronto.ca/watch/06509f1aa30f5e6951d43c2f52c34479">_(https://play.library.utoronto.ca/watch/06509f1aa30f5e6951d43c2f52c34479)</a>, <a href="https://play.library.utoronto.ca/watch/06509f1aa30f5e6951d43c2f52c34479">HD</a> + <a href="https://play.library.utoronto.ca/watch/06509f1aa30f5e6951d43c2f52c34479">_(https://play.library.utoronto.ca/watch/06509f1aa30f5e6951d43c2f52c34479)</a> .</p>

#	Week of ...	
		<p><a href="#">/5e7021111a267f98bcb9f200fec5e942).</a></p> <p>This week's in-class notes are <a href="#">here</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/2122-257-Week_16_In-Class_Notes.pdf">.(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/2122-257-Week_16_In-Class_Notes.pdf)</a>.</p> <p>HW12 is on Crowdmark, with a PDF copy <a href="#">here</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW12.pdf">.(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW12.pdf)</a>. It was due on Friday February 4 at 11:59PM. Solutions sets (<a href="https://q.utoronto.ca/courses/237801/pages/solution-sets-warning">warning (https://q.utoronto.ca/courses/237801/pages/solution-sets-warning)</a>): <a href="#">HW12Sol1</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW12Sol1.pdf">.(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW12Sol1.pdf)</a>.</p>
17	January 31	<p>Monday's class: alternating k-tensors (2). Videos: <a href="#">SD</a> + <a href="https://play.library.utoronto.ca/watch/a4e2c64985741269a8b93780bff62931">.(https://play.library.utoronto.ca/watch/a4e2c64985741269a8b93780bff62931)</a>, <a href="#">HD</a> + <a href="https://play.library.utoronto.ca/watch/46f80217b6daf6281da23859ec515780">.(https://play.library.utoronto.ca/watch/46f80217b6daf6281da23859ec515780)</a>.</p> <p>Wednesday's class: alternating k-tensors (3). Videos: <a href="#">SD</a> + <a href="https://play.library.utoronto.ca/watch/04fe798eaeababf694d95bc119acb9a2">.(https://play.library.utoronto.ca/watch/04fe798eaeababf694d95bc119acb9a2)</a>, <a href="#">HD</a> + <a href="https://play.library.utoronto.ca/watch/ca74665b2e56eddc4139e1518dba4cf">.(https://play.library.utoronto.ca/watch/ca74665b2e56eddc4139e1518dba4cf)</a>.</p> <p>Wednesday's tutorial with Jessica: <a href="https://q.utoronto.ca/courses/237801/files/18981918?wrap=1">PDF (https://q.utoronto.ca/courses/237801/files/18981918?wrap=1)</a> ↓ <a href="https://q.utoronto.ca/courses/237801/files/18981918/download?download_frd=1">.(https://q.utoronto.ca/courses/237801/files/18981918/download?download_frd=1)</a> .</p> <p>Thursday's tutorial with Shuyang: <a href="#">PDF</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/Tutorial-220203-Shuyang.pdf">.(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/Tutorial-220203-Shuyang.pdf)</a>.</p> <p>Friday's class: alternating k-tensors (4). Videos: <a href="#">SD</a> + <a href="https://play.library.utoronto.ca/watch/0b6bb2c9d0d021ec6b7396db2db87046">.(https://play.library.utoronto.ca/watch/0b6bb2c9d0d021ec6b7396db2db87046)</a>, <a href="#">HD</a> + <a href="https://play.library.utoronto.ca/watch/93cf18df57391335923d8ab7f865fd54">.(https://play.library.utoronto.ca/watch/93cf18df57391335923d8ab7f865fd54)</a>.</p> <p>This week's in-class notes are <a href="#">here</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/2122-257-Week_17_In-Class_Notes.pdf">.(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/2122-257-Week_17_In-Class_Notes.pdf)</a>.</p> <p>HW13 is on Crowdmark, with a PDF copy <a href="#">here</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW13.pdf">.(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW13.pdf)</a>. It was due on Friday February 11 at 11:59PM. Solutions sets (<a href="https://q.utoronto.ca/courses/237801/pages/solution-sets-warning">warning (https://q.utoronto.ca/courses/237801/pages/solution-sets-warning)</a>): <a href="#">HW13Sol1</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW13Sol1.pdf">.(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW13Sol1.pdf)</a>.</p>
18	February 7	<p>Monday's class: alternating k-tensors (5). Videos: <a href="#">SD</a> + <a href="https://play.library.utoronto.ca/watch/0bcc41e0d6a47d6d536bea2b727f6349">.(https://play.library.utoronto.ca/watch/0bcc41e0d6a47d6d536bea2b727f6349)</a>, <a href="#">HD</a> + <a href="https://play.library.utoronto.ca/watch/05bab5595d9a3946e81152568d89df77">.(https://play.library.utoronto.ca/watch/05bab5595d9a3946e81152568d89df77)</a>.</p> <p>Wednesday's class: volume forms and orientations. Videos: <a href="#">SD</a> + <a href="https://play.library.utoronto.ca/watch/426acf45f5c9bbfd396eed98013a7c">.(https://play.library.utoronto.ca/watch/426acf45f5c9bbfd396eed98013a7c)</a>, <a href="#">HD</a> + <a href="https://play.library.utoronto.ca/watch/db6ab4c1f68cb4b930f3bd377b485290">.(https://play.library.utoronto.ca/watch/db6ab4c1f68cb4b930f3bd377b485290)</a>.</p> <p>Wednesday's tutorial with Jessica: <a href="https://q.utoronto.ca/courses/237801/files/19167164?wrap=1">PDF (https://q.utoronto.ca/courses/237801/files/19167164?wrap=1)</a> ↓ <a href="https://q.utoronto.ca/courses/237801/files/19167164/download?download_frd=1">.(https://q.utoronto.ca/courses/237801/files/19167164/download?download_frd=1)</a> .</p>



#	Week of ...	
		<p>Thursday's tutorial with Shuyang: <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/Tutorial-220210-Shuyang.pdf">PDF</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/Tutorial-220210-Shuyang.pdf">.(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/Tutorial-220210-Shuyang.pdf)</a>.</p> <p>Friday's class: tangent vectors and tangent spaces. Videos: <a href="https://play.library.utoronto.ca/watch/8b47db420a78dbf407e078538c6a964d">SD</a> + <a href="https://play.library.utoronto.ca/watch/8b47db420a78dbf407e078538c6a964d">.(https://play.library.utoronto.ca/watch/8b47db420a78dbf407e078538c6a964d)</a>, <a href="https://play.library.utoronto.ca/watch/bf64bb7b4d91e37e0b423ef2f79fec34">HD</a> + <a href="https://play.library.utoronto.ca/watch/bf64bb7b4d91e37e0b423ef2f79fec34">.(https://play.library.utoronto.ca/watch/bf64bb7b4d91e37e0b423ef2f79fec34)</a>.</p> <p>HW14 is on Crowdmark, with a PDF copy <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW14.pdf">here</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW14.pdf">.(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW14.pdf)</a>. It is due on Friday February 18 at 11:59PM. Solutions sets (<a href="https://q.utoronto.ca/courses/237801/pages/solution-sets-warning">warning (https://q.utoronto.ca/courses/237801/pages/solution-sets-warning)</a>): <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW14Sol1.pdf">HW14Sol1</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW14Sol1.pdf">.(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW14Sol1.pdf)</a>.</p>
19	February 14	<p>Monday's class: k-forms. Videos: <a href="https://play.library.utoronto.ca/watch/4c719613a5f847c46872a6addff858dc">SD</a> + <a href="https://play.library.utoronto.ca/watch/4c719613a5f847c46872a6addff858dc">.(https://play.library.utoronto.ca/watch/4c719613a5f847c46872a6addff858dc)</a>, <a href="https://play.library.utoronto.ca/watch/0c37a2129451689ac24ad6f4d4cb6305">HD</a> + <a href="https://play.library.utoronto.ca/watch/0c37a2129451689ac24ad6f4d4cb6305">.(https://play.library.utoronto.ca/watch/0c37a2129451689ac24ad6f4d4cb6305)</a>.</p> <p>Wednesday's class: the differential of a 0-form. Videos: <a href="https://play.library.utoronto.ca/watch/588481965c04752a5cbeaf933559ee6a">SD</a> + <a href="https://play.library.utoronto.ca/watch/588481965c04752a5cbeaf933559ee6a">.(https://play.library.utoronto.ca/watch/588481965c04752a5cbeaf933559ee6a)</a>, <a href="https://play.library.utoronto.ca/watch/3d705a7fd6c446fbd166805c2f86921">HD</a> + <a href="https://play.library.utoronto.ca/watch/3d705a7fd6c446fbd166805c2f86921">.(https://play.library.utoronto.ca/watch/3d705a7fd6c446fbd166805c2f86921)</a>.</p> <p>Friday's class: d. Videos: <a href="https://play.library.utoronto.ca/watch/7683a54e2069e2e666c46acb278392ab">SD</a> + <a href="https://play.library.utoronto.ca/watch/7683a54e2069e2e666c46acb278392ab">.(https://play.library.utoronto.ca/watch/7683a54e2069e2e666c46acb278392ab)</a>, <a href="https://play.library.utoronto.ca/watch/37dca84c3754c09639e7f3b684486e98">HD</a> + <a href="https://play.library.utoronto.ca/watch/37dca84c3754c09639e7f3b684486e98">.(https://play.library.utoronto.ca/watch/37dca84c3754c09639e7f3b684486e98)</a>.</p> <p>HW15 is on Crowdmark, with a PDF copy <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW15.pdf">here</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW15.pdf">.(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW15.pdf)</a>. It was due on Friday March 4 at 11:59PM. Solutions sets (<a href="https://q.utoronto.ca/courses/237801/pages/solution-sets-warning">warning (https://q.utoronto.ca/courses/237801/pages/solution-sets-warning)</a>): <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW15Sol1.pdf">HW15Sol1</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW15Sol1.pdf">.(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW15Sol1.pdf)</a>.</p>
R	February 21	Reading Week - no classes, no tutorials, no office hours.
20	February 28	<p>Monday's class: the properties of d.</p> <p>Wednesday's class: the geometric meaning of d.</p> <p>Friday's class: Cubes, chains, boundaries.</p>
21	March 7	<p>Monday's class: Integration on chains.</p> <p><a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/2122-257-TT3.pdf">Term Test 3</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/2122-257-TT3.pdf">.(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/2122-257-TT3.pdf)</a> was on Tuesday at 5-7PM. at EX320. <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/TT3-Info.pdf">More information</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/TT3-Info.pdf">.(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/TT3-Info.pdf)</a>. Solutions sets (<a href="https://q.utoronto.ca/courses/237801/pages/solution-sets-warning">warning (https://q.utoronto.ca/courses/237801/pages/solution-sets-warning)</a>): <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/TT3Sol1.pdf">TT3Sol1</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/TT3Sol1.pdf">.(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/TT3Sol1.pdf)</a>.</p> <p>Wednesday's class: the 3D operators and theorems, informally.</p> <p>Friday's class: Stokes' theorem for chains.</p>

#	Week of ...	
		HW16 is on Crowdmark, with a PDF copy <a href="#">here</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW16.pdf">_(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW16.pdf)_</a> . It was due on Friday March 18 at 11:59PM. Solutions sets ( <a href="https://q.utoronto.ca/courses/237801/pages/solution-sets-warning">warning (https://q.utoronto.ca/courses/237801/pages/solution-sets-warning)</a> ): <a href="#">HW16Sol1</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW16Sol1.pdf">_(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW16Sol1.pdf)_</a> .
22	March 14	Monday's class: Conclusion of the Stokes on Chains proof.  Wednesday's class: The $M \leftrightarrow Z \leftrightarrow C$ theorem and manifolds. Video: <a href="#">HD</a> + <a href="https://play.library.utoronto.ca/watch/07d71963cb987112c8915692b997af76">_(https://play.library.utoronto.ca/watch/07d71963cb987112c8915692b997af76)_</a> .  Friday's class: Proof of the $M \leftrightarrow Z \leftrightarrow C$ theorem.  HW17 is on Crowdmark, with a PDF copy <a href="#">here</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW17.pdf">_(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW17.pdf)_</a> . It was due on Friday March 25 at 11:59PM. Solutions sets ( <a href="https://q.utoronto.ca/courses/237801/pages/solution-sets-warning">warning (https://q.utoronto.ca/courses/237801/pages/solution-sets-warning)</a> ): <a href="#">HW17Sol1</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW17Sol1.pdf">_(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW17Sol1.pdf)_</a> .
23	March 21	Monday's class: Conclusion of the proof of the $M \leftrightarrow Z \leftrightarrow C$ theorem.  Wednesday's class: The tangent space.  Friday's class: Forms on manifolds, orientations.  HW18 is on Crowdmark, with a PDF copy <a href="#">here</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW18.pdf">_(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW18.pdf)_</a> . It was due on Friday April 1 at 11:59PM. Solutions sets ( <a href="https://q.utoronto.ca/courses/237801/pages/solution-sets-warning">warning (https://q.utoronto.ca/courses/237801/pages/solution-sets-warning)</a> ): <a href="#">HW18Sol1</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW18Sol1.pdf">_(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW18Sol1.pdf)_</a> .
24	March 28	Monday's class: Orientations.  Wednesday's class: Orientations, integration.  Friday's class: Integration, Stokes' theorem.  HW19 is on Crowdmark, with a PDF copy <a href="#">here</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW19.pdf">_(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/HW19.pdf)_</a> . It was due on Friday April 1 at 11:59PM. Solutions sets ( <a href="https://q.utoronto.ca/courses/237801/pages/solution-sets-warning">warning (https://q.utoronto.ca/courses/237801/pages/solution-sets-warning)</a> ): <a href="#">HW19Sol1</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW19Sol1.pdf">_(http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/SS/HW19Sol1.pdf)_</a> .
25	April 4	Monday's handout: <a href="#">Planimeters</a> + <a href="http://drorbn.net/2122-257/ap/Planimeters.pdf">_(http://drorbn.net/2122-257/ap/Planimeters.pdf)_</a> . Monday's class: 1D and 2D Stokes, the planimeter.  Wednesday's handout: <a href="#">Plate Tectonics</a> + <a href="http://drorbn.net/2122-257/ap/PlateTectonics.pdf">_(http://drorbn.net/2122-257/ap/PlateTectonics.pdf)_</a> . Wednesday's class: More on the planimeter, volume forms.  Friday's class: The 3D Theorems: <a href="#">SD</a> + <a href="https://play.library.utoronto.ca/watch/9824e4ea37a1fbd14e4a8d8b76a5267e">_(https://play.library.utoronto.ca/watch/9824e4ea37a1fbd14e4a8d8b76a5267e)_</a> , <a href="#">HD</a> + <a href="https://play.library.utoronto.ca/watch/e5af8224e8573cc14b8d5bdc221f3f63">_(https://play.library.utoronto.ca/watch/e5af8224e8573cc14b8d5bdc221f3f63)_</a> . Handout: <a href="#">3DTheorems.pdf</a> + <a href="http://drorbn.net">_(http://drorbn.net</a>

#	Week of ...	
		<a href="#">/AcademicPensieve/Classes/2122-257-AnalysisII/3DTheorems.pdf</a> ). Class notes: <a href="#">3DTheorems-Slides@.pdf</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/3DTheorems-Slides@.pdf">http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/3DTheorems-Slides@.pdf</a> .
WF1	April 11	<p>Winter Final Assessments.</p> <p>Monday: An extra non-mandatory class on Maxwell's Equations. Handout: <a href="#">Maxwell.pdf</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/Maxwell.pdf">http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/Maxwell.pdf</a>). Annotated slides: <a href="#">Maxwell-Slides@220411.pdf</a> + <a href="http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/Maxwell-Slides@220411.pdf">http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/Maxwell-Slides@220411.pdf</a>). Video: <a href="#">HD</a> + <a href="https://play.library.utoronto.ca/watch/1bd92d5217ed1fe890795b9cf1744c5f">https://play.library.utoronto.ca/watch/1bd92d5217ed1fe890795b9cf1744c5f</a>.</p> <p>Friday: Good Friday, UofT closed.</p>
WF2	April 18	<p>No Dror office hours this week.</p> <p>Wednesday and Friday 11am-1pm: office hours with Sebastian at <a href="https://utoronto.zoom.us/j/87218810932">https://utoronto.zoom.us/j/87218810932</a> + <a href="https://utoronto.zoom.us/j/87218810932">https://utoronto.zoom.us/j/87218810932</a> (password vchat).</p>
WF3	April 25	<p>Monday, Tuesday, and Wednesday 11am-1pm: office hours with Shuyang at <a href="https://utoronto.zoom.us/j/83428997680">https://utoronto.zoom.us/j/83428997680</a> + <a href="https://utoronto.zoom.us/j/83428997680">https://utoronto.zoom.us/j/83428997680</a> (password vchat).</p> <p>Monday, Tuesday, and Wednesday 1:30-4pm: office hours with Dror in person at BA 6178 and online at <a href="http://drorbn.net/vchat">http://drorbn.net/vchat</a> + <a href="http://drorbn.net/vchat">http://drorbn.net/vchat</a>.</p> <p>Wednesday 7-10pm: the final exam at EX200. Good luck!</p>

### Further resources:

- The University of Toronto [Faculty of Arts & Science Calendar](https://fas.calendar.utoronto.ca/) (<https://fas.calendar.utoronto.ca/>).
- Academic integrity [Information for Students](https://www.artsci.utoronto.ca/current/academic-advising-and-support/student-academic-integrity) (<https://www.artsci.utoronto.ca/current/academic-advising-and-support/student-academic-integrity>).
- [COVID-19 - Undergraduate Student FAQs](https://www.artsci.utoronto.ca/covid19-artsci-student-faqs) (<https://www.artsci.utoronto.ca/covid19-artsci-student-faqs>).
- [Recommended Technology Requirements for Remote/Online Learning](https://www.vicprovoststudents.utoronto.ca/covid-19/tech-requirements-online-learning/) (<https://www.vicprovoststudents.utoronto.ca/covid-19/tech-requirements-online-learning/>).
- Dror's 2016-17 MAT257 Analysis II [class website](http://drorbn.net/index.php?title=1617-257) + <http://drorbn.net/index.php?title=1617-257> and [personal notebook](#) + <http://drorbn.net/AcademicPensieve/Classes/1617-257-AnalysisII/index.html>.
- Dror's 2020-21 MAT257 Analysis II [class website](http://drorbn.net/2021-257) + <http://drorbn.net/2021-257> and [personal notebook](#) + <http://drorbn.net/AcademicPensieve/Classes/2021-257-AnalysisII/index.html>.
- Dror's personal [2122-257-AnalysisII](http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/) + <http://drorbn.net/AcademicPensieve/Classes/2122-257-AnalysisII/> notebook.