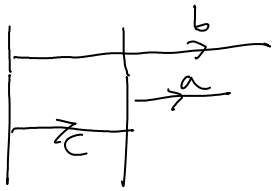
Aside

May-29-11
11:27 AM

If $[c, a] = h \cdot a$, what's $e^{t\,\mathrm{ad}_c}(a)$?

Set $\gamma = e^{t\,\mathrm{ad}_c}(a)$. Then

$$\frac{\partial \gamma}{\partial t} = h a \frac{\partial \gamma}{\partial a} \qquad \gamma(0, a) = a$$



$$[c, a] = h(a - b)$$
$$[c, b] = 0$$

$$\frac{\partial}{\partial t}\gamma = h(a-b)\frac{\partial \gamma}{\partial a}$$

```
In[21]:= DSolve[
          {
           D[g[t, a], t] == h (a - b) D[g[t, a], a],
           g[0, a] == a
          },
          g[t, a],
          {t, a}
         ]
Out[21]= {{g[t, a] → b + a e^(h t) - b e^(h t)}}
```

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```

So $e^{-c} a e^{c} = b + a e^{ht} - b e^{ht}$

or ~~$a e^{c} = e^{c}(1 + \cdots + b) + e^{c} a e^{ht}$~~

Agrees w/ Talks/Chicago-1009: