

In[1]:= $f = \frac{1 - \sqrt{1 - 4x}}{2x}$

Out[1]= $\frac{1 - \sqrt{1 - 4x}}{2x}$

In[4]:= `Series[f, {x, 0, 10}]`

Out[4]= $1 + x + 2x^2 + 5x^3 + 14x^4 + 42x^5 + 132x^6 + 429x^7 + 1430x^8 + 4862x^9 + 16796x^{10} + O[x]^{11}$

In[9]:= `x(4x - 1) D[f, x] + 2xf - f + 1 // Simplify`

Out[9]= 0