

Section 6.2, #9

$$y' = \frac{2xy}{(1+x^2)}$$

$$\frac{dy}{dx} = \frac{2xy}{(1+x^2)}$$

$$dy(1+x^2) = 2xydx$$

$$\frac{dy(1+x^2)}{y} = \frac{2xydx}{y}$$

$$\frac{1}{y}(1+x^2)dy = 2xdx$$

$$\int \frac{1}{y} dy = \int \frac{2x}{(1+x^2)} dx$$

$$\ln|y| + C_1 = \ln|1+x^2| + C_2$$

$$\ln|y| = \ln|1+x^2| + C_3$$

$$\ln|y| = \ln|1+x^2| + \ln|C_4|$$

$$\ln|y| = \ln|C_4(1+x^2)|$$

Solve: $(1+x^2)y' - 2xy = 0$

** There exists C_4 such that $C_3 = \ln|C_4|$

and $y = C_4(1+x^2)$