



Name: _____

Find $\frac{dy}{dx}$

$$a-) y = \tan^2(\sqrt{x^2+1}) = (\tan(\sqrt{x^2+1}))^2$$

$$y' = 2(\tan \sqrt{x^2+1}) \left(\sec^2 \sqrt{x^2+1} \right) \left(\frac{1}{2} (x^2+1)^{-\frac{1}{2}} \right) (2x) \checkmark$$

$$\frac{dy}{dx} = y' = \frac{2x \cdot \tan \sqrt{x^2+1} \cdot \sec^2 \sqrt{x^2+1}}{\sqrt{x^2+1}} \checkmark$$

$$b-) x^2 y^3 = x + 4y + 7$$

$$2xy^3 + 3y^2 y' x^2 = 1 + 4y' \checkmark$$

$$2xy^3 - 1 = 4y' - 3y^2 y' x^2$$

$$\frac{2xy^3 - 1}{4 - 3y^2 x^2} = \frac{y'(4 - 3y^2 x^2)}{(4 - 3y^2 x^2)}$$

$$\therefore \frac{dy}{dx} = y' = \frac{2xy^3 - 1}{4 - 3y^2 x^2} \checkmark$$

good!