

Chain Rule ws 5

$$1) \frac{dy}{dx} = \frac{1}{2} (3x^4 - \sqrt{\sin x})^{-1/2} \left[12x^3 - \left(\frac{1}{2} (\sin x)^{-1/2} (\cos x) \right) \right]$$

$$2) \frac{dy}{dx} = \left(e^{\sqrt{\tan(3x)} - \frac{1}{\sqrt{x}}} \right) \left(\frac{1}{2} (\tan(3x))^{-1/2} (\sec^2(3x))(3) - \left(-\frac{1}{3} x^{-4/3} \right) \right)$$

$$3) \frac{dy}{dx} = \left[3^{\csc(\frac{x}{2})} \cdot \ln 3 \right] \left(-\csc(\frac{x}{2}) \cot(\frac{x}{2}) \right) \left(\frac{1}{2} \right) (\sec^2(x^3)) - \left[(2 \sec(x^3)) (\sec(x^3) \tan(x^3)) (3x^2) \right]$$

$\sec^4(x^3)$

$(3^{\csc(\frac{x}{2})})$

$$4) \frac{dy}{dx} = \left[\sec\left(\frac{\sqrt{\sin(x^2)}}{6x^3}\right) \tan\left(\frac{\sqrt{\sin(x^2)}}{6x^3}\right) \right] \frac{\left[\frac{1}{2} (\sin(x^2))^{-1/2} (\cos(x^2))(2x) \right] (6x^3) - (18x^2) (\sqrt{\sin(x^2)})}{36x^6}$$

$$5) \frac{dy}{dx} = \frac{\left[\left(\frac{1}{6x^2} \right) (12x) \right] (5x^4) - (20x^3) (\ln(6x^2))}{25x^8}$$

$$6) \frac{dy}{dx} = \left[(e^{4x^2}) (8x) \right] + \left[\left(\frac{1}{2x^4} \right) (8x^3) \right] (e^{4x^2}) - \left[(9(x-3)^8) (4x-6)^{10} + (10(4x-6)^9) (4) (x-3)^9 \right]$$

7) top: $\sqrt{3(4)-3} = \sqrt{9} = 3$ → set equal

bottom: $\sqrt{4} + 2a(4) = 2 + 8a$ $3 = 2 + 8a$

$$1 = 8a$$

$$a = \frac{1}{8}$$