

QUIZ 7

1) Find $\frac{dy}{dx}$ given $\sin(y) - y\sqrt{x} = 5$.
(2 pts)

$$\frac{d}{dx} [\sin(y)] - \frac{d}{dx} [y\sqrt{x}] = \frac{d}{dx} [5]$$

↑ product rule!

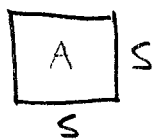
$$\cos(y) \frac{dy}{dx} - \left(\frac{dy}{dx} \sqrt{x} + y \left(\frac{1}{2} x^{-1/2} \right) \right) = 0$$

$$\cos(y) \frac{dy}{dx} - \frac{dy}{dx} \sqrt{x} = \frac{y}{2\sqrt{x}}$$

$$\frac{dy}{dx} (\cos(y) - \sqrt{x}) = \frac{y}{2\sqrt{x}}$$

$$\frac{dy}{dx} = \frac{y}{2\sqrt{x}(\cos(y) - \sqrt{x})}$$

2) Sides of a square are lengthening at
(2 pts) 3 in/min. How fast is the area increasing when the sides are 4 in?



Want: $\frac{dA}{dt}$ When: $s = 4$

Given: $\frac{ds}{dt} = 3$ in/min.

Formula: $A = s^2$

Derivative: $\frac{dA}{dt} = 2s \frac{ds}{dt}$

Plug in: $\frac{dA}{dt} = 2(4)(3) = 24$ in/min.