

## Math 112 Solutions to Quiz 2

1. Differentiate  $y = 5\sqrt{x} - \frac{4}{x} + 3x^5 - 17$ .

$$y' = \frac{5}{2\sqrt{x}} + \frac{4}{x^2} + 15x^4$$

2. Differentiate  $y = (x^2 - 5x + 3)(5 + x^3)$ .

$$y' = (2x - 5)(5 + x^3) + (x^2 - 5x + 3)(3x^2)$$

3. Suppose that the weekly sales volume  $s$  (in hundreds of Things sold) depends on the price per Thing (in dollars) of the product according to

$$s = \frac{20}{\sqrt{3p+1}}.$$

- (a) What is the rate of change in sales volume when the price is \$3? Give your answer with units.

$$s = 20(3p+1)^{-1/2}$$

$$s' = -30(3p+1)^{-3/2}$$

$$s'(3) = -30(10)^{-3/2} \approx -0.95 \text{ hundred Things per dollar}$$

- (b) If you increase your price from \$3 to \$4, expect to sell approximately 95 fewer Things.