

1) Given  $y = 4\sqrt{x^3} - 5\sqrt{x}$  find:  $\left. \frac{dy}{dx} \right|_{x=16}$

2) Algebraically find the equation of the tangent line to  $f(x) = x - x^2$  at  $x = -3$

3) If the price (in dollars) of a product is given by  $p(x) = \frac{1024}{x} + 1300$ , where  $x$  represents the demand for the product in units, find  $p'(2)$  and Interpret.

- 4) The median weight of a baby chimpanzee whose age is between 0 and 36 months can be approximated by the function  $w(t) = 6.15 + 1.85t - 0.0521t^2 + 0.000651t^3$ , where  $t$  is measured in months and  $w$  is measured in pounds.
- Find the weight of a baby chimp at 30 months (rounded to the nearest pound)
  - Find the rate of change of weight with respect to time
  - Find the rate of change of the baby's weight with respect to time at age 30 months (rounded to the nearest hundredth) Interpret
  - Graph  $w(t)$  in an appropriate window, be sure to label the axes.