#1) Find the equation for the tangent line to the curve $f(x) = x^2 - 7x + 18$ at $x = 4$. Write the answer in slope-intercept form.

#3) If $g(w) = \sqrt[3]{w} - \frac{1}{w}$ find $\frac{dg}{dw}$

#4) If $f(x) = x^4$ find $\left.\frac{df}{dx}\right|_{x=-2}$

#2) In a psychology experiment, a person could memorize x words in $f(x) = 2x^2 - x$ seconds (for $0 \leq x \leq 10$).
  a. Find $f'(x)$
  b. Evaluate $f'(5)$
  c. Interpret $f'(5)$ as an instantaneous rate of change in the proper units.

#5) Why is the derivative referred to as an "instantaneous" rate of change rather than just an "average" rate of change?

#6) The number of ants noshing on some peaches at a picnic is $A(x) = 8000\sqrt{x} - 6000\sqrt[3]{x}$ ants, where x is the minutes since the first ant crashed the picnic
  a. Find $A'(x)$.
  b. Find $A'(64)$.
  c. Interpret your answer from (b)

#8) Differentiate $f(x) = \frac{x^4 + x^2 + 1}{x^2 + 1}$

#9) Differentiate $f(x) = \frac{2e^{7x}}{\ln(x)}$

#7) Differentiate.
$$f(x) = (x^2 + 2x)(2x + 1)$$

#10) Differentiate $f(x) = x^3 e^x$