

Name: _____ Date: _____ Period: _____

Limits and Derivatives (*Show all work for full credit*)

Simplify each expression:

$$1) \frac{(2+h)^2 - 4}{h}$$

$$2) \frac{(3+h)^2 + 3 + h - 12}{h}$$

$$3) \frac{\frac{1}{2+h} - \frac{1}{2}}{h}$$

Find the instantaneous velocity at the indicated value of t .

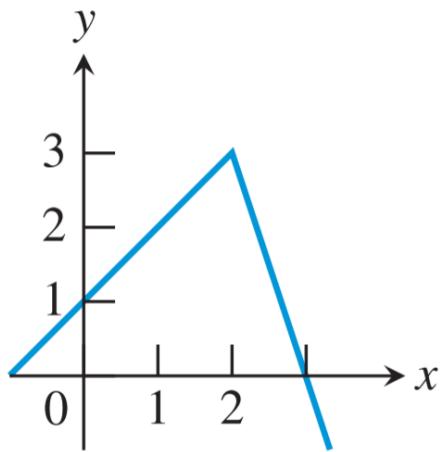
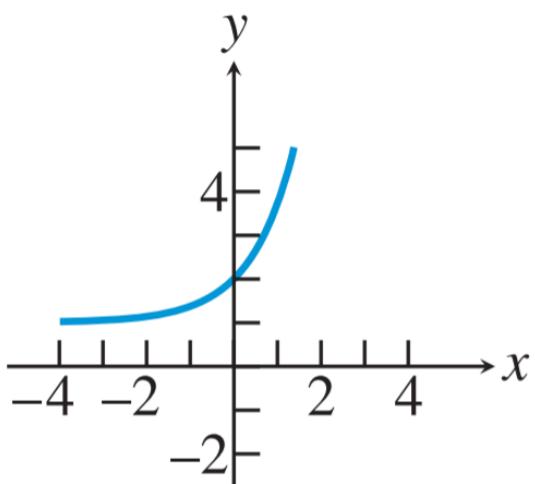
$$4) s(t) = 3t - 5 \text{ at } t = 4$$

$$5) s(t) = \frac{2}{t+1} \text{ at } t = 2$$

Use the graph to estimate the slope of the tangent line, if it exists at the given point.

$$6) x = 0$$

$$7) x = 2$$



Find the derivative of f

8) $f(x) = 2 - 3x$

9) $f(x) = 3x^2 + 2x - 1$

10) $f(x) = \frac{1}{x-2}$