

NAME _____ DATE _____ PER _____ SCORE _____

Limit Review

Finding Limits (11.1-11.2, 2.6): Find the limit using any method.

1) $\lim_{x \rightarrow 2} \frac{x^2 + x - 6}{x^3 - 8}$

2) $\lim_{x \rightarrow -2} \frac{x+2}{\sqrt{x+6}-2}$

3) $\lim_{x \rightarrow -\infty} \frac{3x+4}{-2x^2+x}$

4) $\lim_{x \rightarrow 3} \begin{cases} 1+x, & \text{if } x < 0 \\ 2x, & \text{if } 0 \leq x \leq 3 \\ 4+x, & \text{if } x > 3 \end{cases}$

5) $\lim_{x \rightarrow \infty} \frac{x^2 - 4x + 3}{x - 3}$

6) $\lim_{x \rightarrow -2} \frac{\frac{1}{3} - \frac{2}{x+8}}{x+2}$

Determining Discontinuity: Determine for what numbers, if any, the given function is discontinuous. Use the *definition of continuity* to show the discontinuity.

$$7) f(x) = \frac{x^2 - 3x - 4}{x - 2}$$

$$8) f(x) = \begin{cases} \frac{x^2 - 4}{x - 2} & \text{if } x \neq 2 \\ 4 & \text{if } x = 2 \end{cases}$$

Derivatives: Find the derivative using the definition of the derivative.

$$9) f(x) = \sqrt{x - 4}$$

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