Review for Limits Quiz.doc **Name**______________________________

1) Find the limits (if they exist) for the graph of f(x) below.

$\lim_{x\to -4^-} f(x) =$ 0

$\lim_{x\to -4^+} f(x) =$ 3

$\lim_{x\to -4} f(x) =$ $L \neq R$ (DNE)

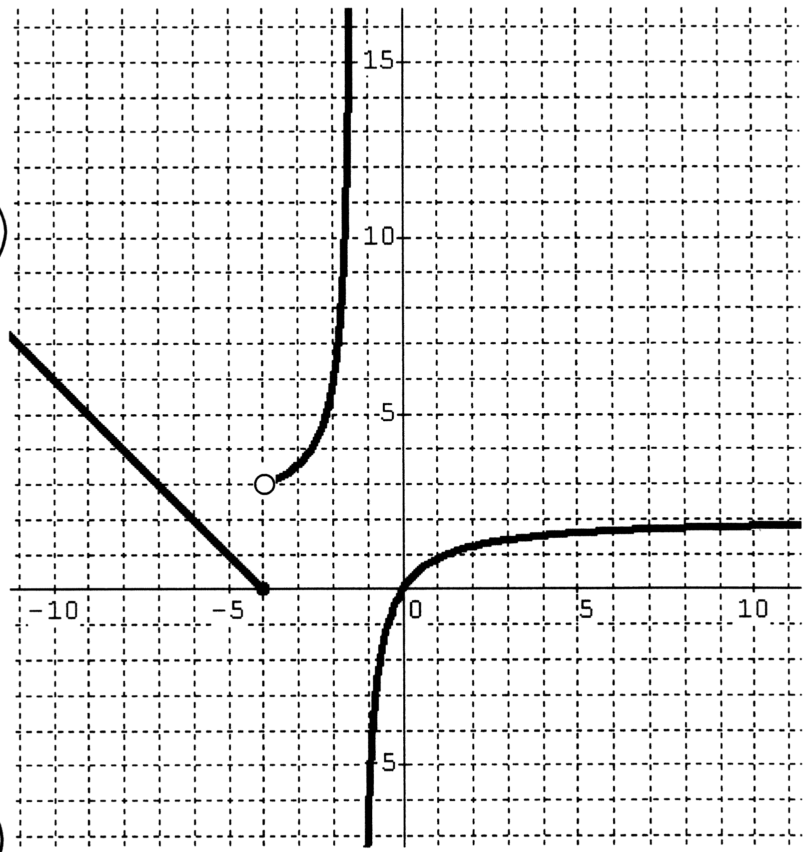
$\lim_{x\to -\infty} f(x) =$ $+\infty$ (DNE)

$\lim_{x\to \infty} f(x) =$ 2

$\lim_{x\to 0} f(x) =$ 0

$\lim_{x\to -1^-} f(x) =$ $+\infty$ (DNE)

$\lim_{x\to -1^+} f(x) =$ $-\infty$ (DNE)



2) Find the following limits algebraically.

a) $\lim_{x\to -\infty} \frac{x^2+x}{x^3+2x^2}$

$\boxed{0}$

b) $\lim_{x\to \infty} \frac{\cancel{x^2}+3}{2\cancel{x^2}-2}$

$\boxed{\frac{1}{2}}$

c) $\lim_{x\to \infty} \frac{x^3-x^2-2}{-2x^2}$ + −

$\boxed{-\infty, \text{DNE}}$

d) $\lim_{x\to -\infty} \frac{x^3-x^2-2}{-2x^2}$ − −

$\boxed{+\infty, \text{DNE}}$

3) Find the following limits algebraically.

a) $\lim_{x \to 4^-} \dfrac{x^2+8x+16}{x+4} = \dfrac{(x+4)\cancel{(x+4)}}{\cancel{(x+4)}}$ $4+4=8$

(a) 0 (b) 8 (c) 16 (d) -∞ (DNE) (e) ∞ (DNE)

b) $\lim_{x \to -4^-} \dfrac{x^2+8x+16}{x+4} = x+4 \to -4+4=0$

(a) 0 (b) 8 (c) 16 (d) -∞ (DNE) (e) ∞ (DNE)

c) $\lim_{x \to 5^+} \dfrac{-x}{x-5}$ $\dfrac{-5.1}{5.1-5}$ $\dfrac{-5.1}{0.1}$ asymptote at $x=5$

(a) 0 (b) 5 (c) $\dfrac{-1}{5}$ (d) -∞ (DNE) (e) ∞ (DNE)

d) $\lim_{x \to 1^-} \dfrac{-x}{x-5}$ $\dfrac{-1}{-4} = \dfrac{1}{4}$

(a) $\dfrac{-1}{6}$ (b) $\dfrac{1}{4}$ (c) $\dfrac{1}{5}$ (d) -∞ (DNE) (e) ∞ (DNE)

e) $\lim_{x \to 0^-} \dfrac{x^2-x-12}{x^2-4x}$ $\dfrac{\cancel{(x-4)}(x+3)}{x\,\cancel{(x-4)}}$ $\dfrac{-.1+3}{-.1}$ asymptote at 0

(a) -12 (b) 0 (c) 3 (d) -∞ (DNE) (e) ∞ (DNE)

f) $\lim_{x \to 3} \dfrac{x^2-x-12}{x^2-4x} \to \dfrac{x+3}{x}$ $\dfrac{6}{3}$

(a) -3 (b) -2 (c) 2 (d) -∞ (DNE) (e) ∞ (DNE)