

KFUPM Summer Term (071) Name: \_\_\_\_\_ Serial #: \_\_\_\_\_  
 MATH 101 Quiz # 1 ID: # \_\_\_\_\_ KEY \_\_\_\_\_ Sec. #: \_\_\_\_\_

1. (9-points) Sketch the graph of the function  $f(x) = \begin{cases} -x^2, & x < 0 \\ x - 1, & 0 < x < 2 \\ \frac{1}{x-2}, & x > 2 \end{cases}$ ,

then find the following limits:

(a)  $\lim_{x \rightarrow 0^-} f(x) = 0$

(b)  $\lim_{x \rightarrow 0^+} f(x) = -1$

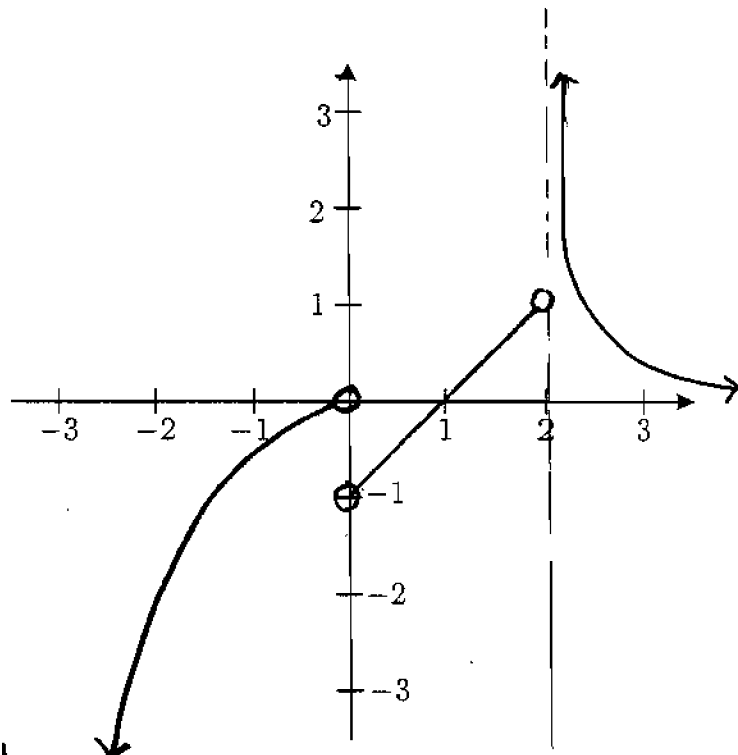
(c)  $\lim_{x \rightarrow 0} f(x) = \text{DNE}$

(d)  $\lim_{x \rightarrow 3/2} f(x) = \frac{3}{2} - 1 = \frac{1}{2}$

(e)  $\lim_{x \rightarrow 2^-} f(x) = 1$

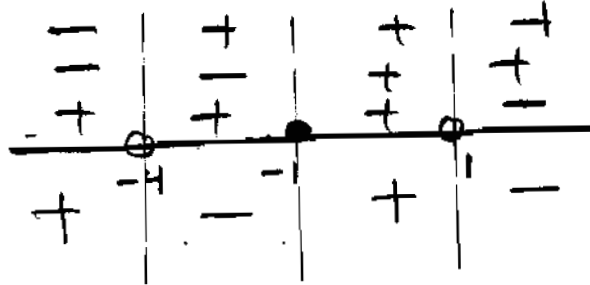
(f)  $\lim_{x \rightarrow 2^+} f(x) = +\infty$

(g)  $\lim_{x \rightarrow 2} f(x) = \text{DNE}$



2. (6-points) Let  $f(x) = \frac{x+1}{4-3x-x^2}$ . Find

$$= \frac{x+1}{(4+x)(1-x)}$$



(a)  $\lim_{x \rightarrow -4^-} f(x) = +\infty$

(b)  $\lim_{x \rightarrow -4^+} f(x) = -\infty$

(c)  $\lim_{x \rightarrow 1^-} f(x) = +\infty$

(d)  $\lim_{x \rightarrow 1^+} f(x) = -\infty$

Then write the equations of all vertical asymptotes of the curve  $y = f(x)$ .

$$x = -4, \quad x = 1$$

KFUPM Summer Term (071) Name: \_\_\_\_\_ Serial #: \_\_\_\_\_  
 MATH 101 Quiz # 1 ID: # \_\_\_\_\_ Sec. #: \_\_\_\_\_

KEY

1. (9-points) Sketch the graph of the function  $f(x) = \begin{cases} x^2, & x < 0 \\ x+1, & 0 < x < 2 \\ \frac{-1}{x-2}, & x > 2 \end{cases}$ ,

then find the following limits:

(a)  $\lim_{x \rightarrow 0^-} f(x) = 0$

(b)  $\lim_{x \rightarrow 0^+} f(x) = 1$

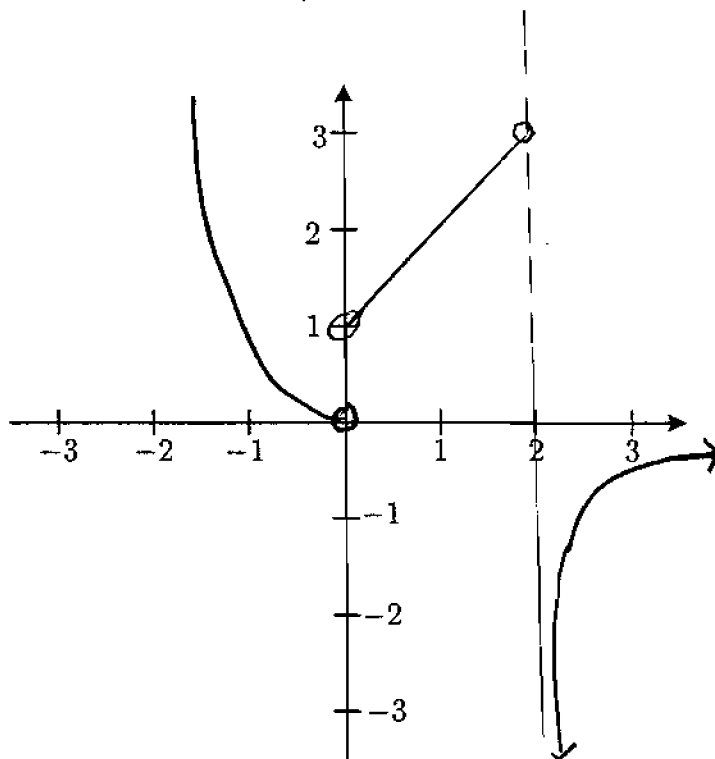
(c)  $\lim_{x \rightarrow 0} f(x) = \text{DNE}$

(d)  $\lim_{x \rightarrow 3/2} f(x) = \frac{3}{2} + 1 = \frac{5}{2}$

(e)  $\lim_{x \rightarrow 2^-} f(x) = 3$

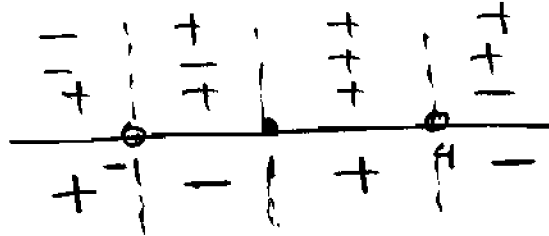
(f)  $\lim_{x \rightarrow 2^+} f(x) = -\infty$

(g)  $\lim_{x \rightarrow 2} f(x) = \text{DNE}$



- 2. (6-points) Let  $f(x) = \frac{x-1}{4+3x-x^2}$ . Find

$$= \frac{x-1}{(4-x)(1+x)}$$



(a)  $\lim_{x \rightarrow -1^-} f(x) = +\infty$

(b)  $\lim_{x \rightarrow -1^+} f(x) = -\infty$

(c)  $\lim_{x \rightarrow 4^-} f(x) = +\infty$

(d)  $\lim_{x \rightarrow 4^+} f(x) = -\infty$

Then write the equations of all vertical asymptotes of the curve  $y = f(x)$ .

$$x = -1, \quad x = 4$$