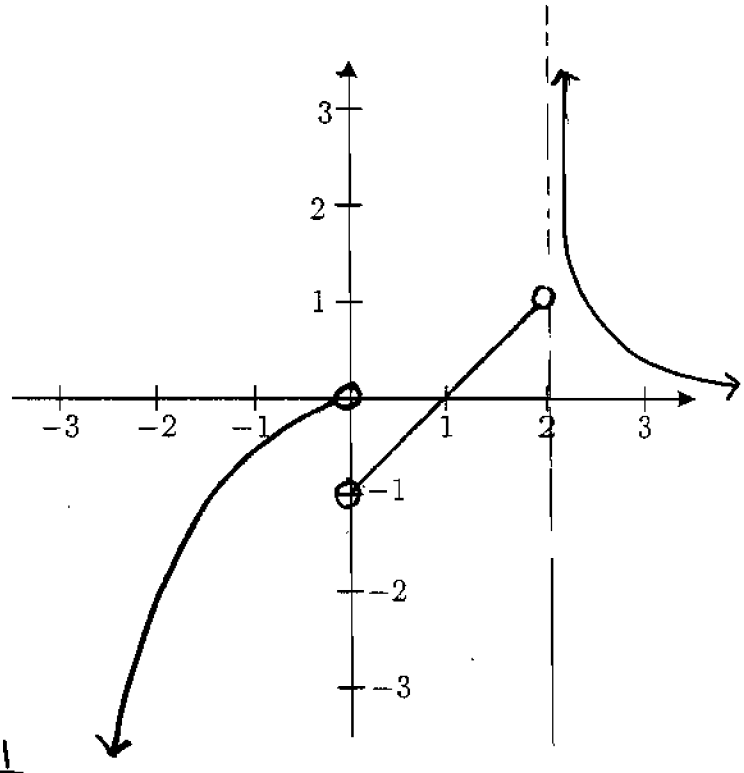
KFUPM Summer Term (071) Name: _____ Serial #: _____

MATH 101 Quiz # 1 ID: #: KEY Sec. #: _____

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

then find the following limits:



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

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

(c) $\lim_{x \to 0} f(x)$ DNE

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

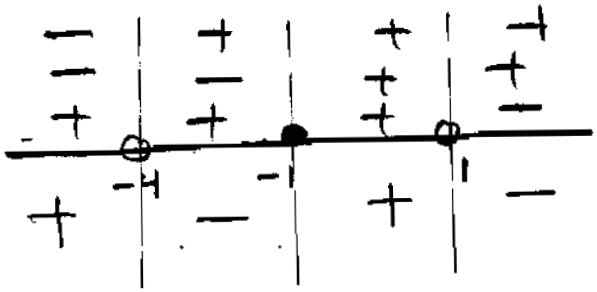
(e) $\lim_{x \to 2^-} f(x) = 1$

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

(g) $\lim_{x \to 2} f(x)$ DNE

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

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



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

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

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

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

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

$x = -4$, $x = 1$

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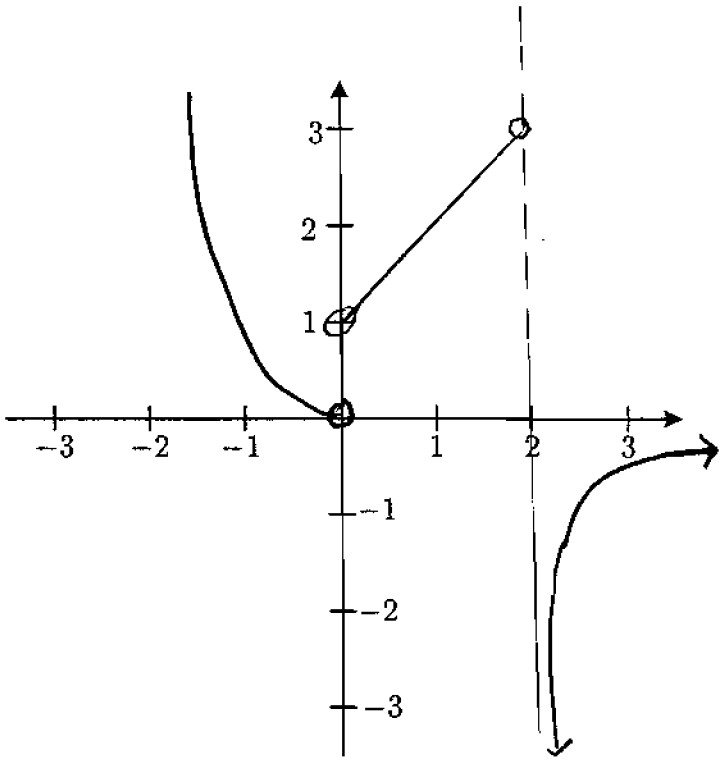
1. (9-points) Sketch the graph of teh function $f(x) = \begin{cases} x^2, & x < 0 \\ x+1, & 0 < x < 2 \\ \dfrac{-1}{x-2}, & x > 2 \end{cases}$,

then find the following limits:



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

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

(c) $\lim_{x \to 0} f(x)$ DNE

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

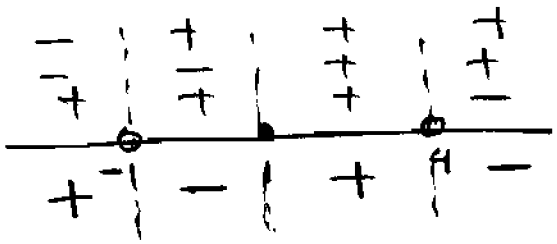
(e) $\lim_{x \to 2^-} f(x) = 3$

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

(g) $\lim_{x \to 2} f(x)$ DNE

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

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



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

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

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

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

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

$x = -1$, $x = 4$.