$\bar{x} = 23.8$

mod = 24

MATH 131
Quiz II
September 8, 1989

Name KEY

1. Find the limit (or say that it doesn't exist):

(3) 6 must

$$\lim_{x \to 2^+} f(x), \text{ where } f(x) = \begin{cases} x^2+2, & x > 2 \\ 5, & x = 2 \\ x+2, & x < 2 \end{cases}$$

12

2. Find the following limits (finite), or else say they do not exist:

a. $\lim_{x \to 5} \frac{x^2 - 25}{x - 5} = \lim_{x \to 5} \frac{(x+5)(x-5)}{x-5} = \lim_{x \to 5} (x+5) = 5+5 = 10$ must

b. $\lim_{y \to 4} \frac{y - 4}{y(\sqrt{y} - 2)} = \lim_{y \to 4} \frac{(y-4)(\sqrt{y}+2)}{y(\sqrt{y}-2)(\sqrt{y}+2)} = \lim_{y \to 4} \frac{(y-4)(\sqrt{y}+2)}{y(y-4)}$

$$= \lim_{y \to 4} \frac{\sqrt{y}+2}{y} = \frac{2+2}{4} = 1$$

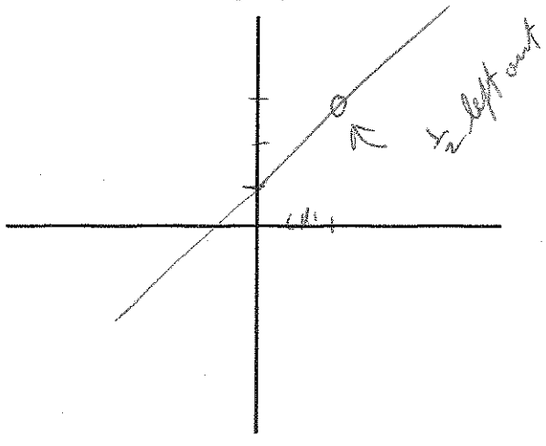
10

3. For the function:

$f(x) = \frac{x^2 - x - 2}{x-2}$, $= \frac{(x-2)(x+1)}{x-2} = x+1 \quad x \neq +2$ all

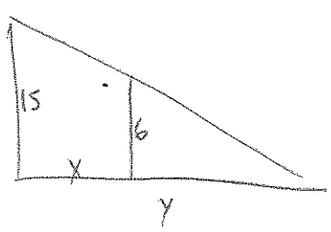
a. $\lim_{x \to 2} f(x) = \lim_{x \to 2} (x+1) = 3$

b. Sketch the graph of f.



5

5. A man is walking away from a street light which is on top of a 15 foot post. He is 6 feet tall. Write the distance of his shadow from the base of the post as a function of the distance he is from the light post.



3 yrs tall

$\frac{6}{15} = \frac{y-x}{y}$

$6y = 15y - 15x$

$-9y = -15x$

$y = \frac{5}{3}x, \quad x \geq 0$

typo

$\frac{y}{y-x} = \frac{6}{15}$

$\frac{15}{16} = \frac{y}{y-x}$

$\frac{6}{15}y - \frac{6}{15}x = y$

$-\frac{9}{15}x = -\frac{6}{15}y$

$y = \frac{3}{2}x$

$x \geq 0$