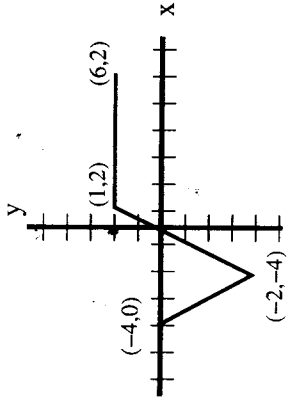


Problem 4 (15 points). Given the graph of the function below:



(3 points) a) On what interval(s) is the function positive?

$x \in \text{in } (0, 6)$

(3 points) b) On what interval(s) is the function negative?

$x \in \text{in } (-4, 0)$

(3 points) c) What is the range of the function?

$[-4, 2]$

(6 points) d) Express the function as a piece-wise defined function.

line through $(-4, 0), (-2, -4)$

$$m = \frac{-4 - 0}{-2 - (-4)}$$

$$= \frac{-4}{2} = -2$$

$$y = -2x + b$$

$$0 = (-2)(-4) + b$$

$$0 = 8 + b$$

$$-8 = b$$

$$y = -2x - 8$$

$[-4, 2]$

$$f(x) = \begin{cases} -2x - 8 & -4 \leq x \leq -2 \\ 2x & -2 \leq x \leq 1 \\ 2 & 1 \leq x \leq 6 \end{cases}$$

line through $(1, 2), (-2, -4)$

$$m = \frac{2 - (-4)}{1 - (-2)} = \frac{6}{3} = 2$$

from graph

$$y = 0 \in y \text{ intercept.}$$

$$y = 2x + 0.$$