Topics from 2.1 through 2.4

Piecewise-defined functions

§2.2 #39) Sketch the graph of

$$f(x) = \begin{cases} -1 & \text{if } x < -1 \\ 1 & \text{if } -1 \le x \le 1 \\ -1 & \text{if } x > 1 \end{cases}$$

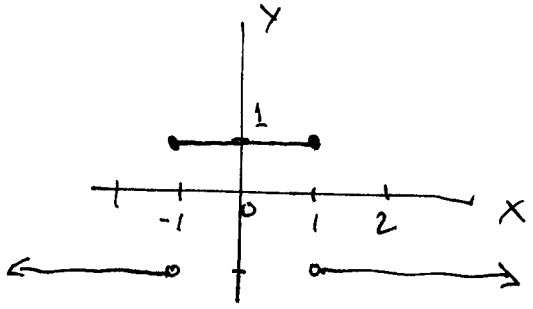
ex: $f(-4) = -1$

$f(0) = 1$

$f(3) = -1$

$f(1) = 1$

$f(1.0001) = -1$



42) $$f(x) = \begin{cases} 1 - x^2 & \text{if } x \le 2 \\ x & \text{if } x > 2 \end{cases}$$

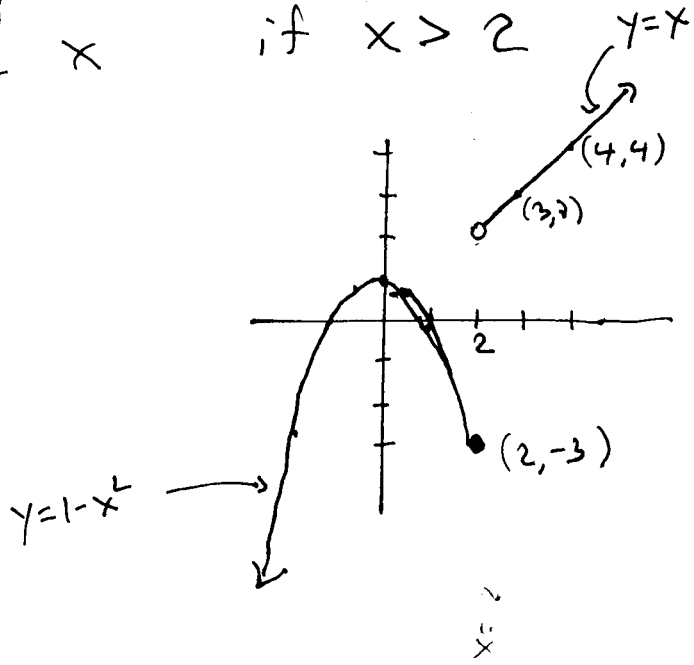
$f(1) = 1 - 1^2 = 0$

$f(-2) = 1 - (-2)^2 = -3$

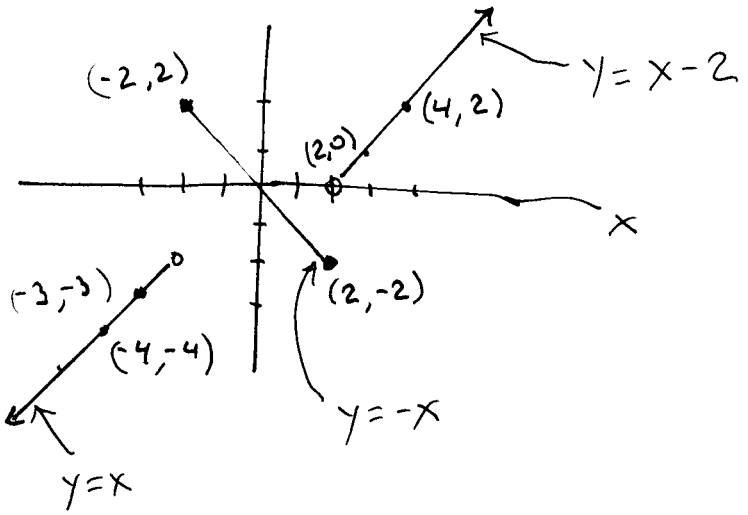
$f(6) = 6$

$f(2) = -3$

$f(0) = 1$

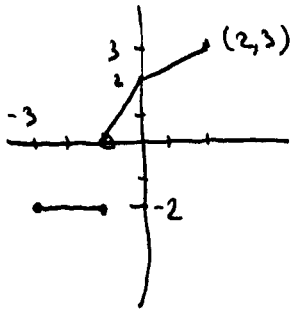


ex: Find an equation (as a piecewise defined function) of the following graph



$$f(x) = \begin{cases} x & \text{if } x < -2 \\ -x & \text{if } -2 \le x \le 2 \\ x-2 & \text{if } x > 2 \end{cases}$$

56)



Domain = $[-3, 2]$

Range = $\{-2\} \cup (0, 3]$

The equation:

$$f(x) = \begin{cases} -2 & \text{if } -3 \le x \le -1 \\ 2x+2 & \text{if } -1 < x < 0 \\ \frac{1}{2}x+2 & \text{if } x \ge 0 \end{cases}$$