

Math 121 – Section 2.4 Solutions

25. For the function:

$$f(x) = \begin{cases} x^2 & \text{if } x < 0 \\ 2 & \text{if } x = 0 \\ 2x + 1 & \text{if } x > 0 \end{cases}$$

- (a) $f(-2) = (-2)^2 = 4$
- (b) $f(0) = 2$
- (c) $f(2) = 2(2) + 1 = 5$

26. For the function:

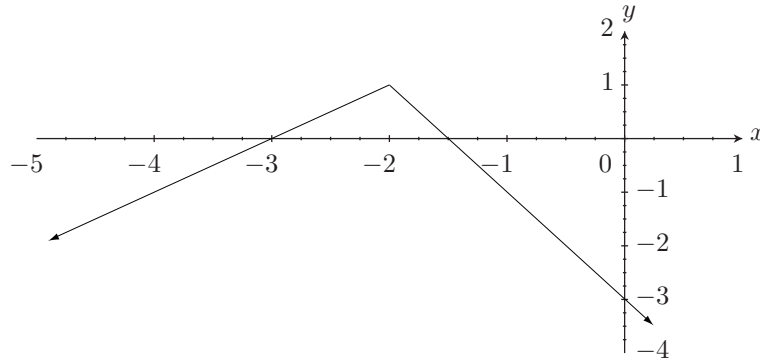
$$f(x) = \begin{cases} -3x & \text{if } x < -1 \\ 0 & \text{if } x = -1 \\ 2x^2 + 1 & \text{if } x > -1 \end{cases}$$

- (a) $f(-2) = -3(-2) = 6$
- (b) $f(-1) = 0$
- (c) $f(0) = 2(0)^2 + 1 = 1$

32. For the function:

$$f(x) = \begin{cases} x + 3 & \text{if } x < -2 \\ -2x - 3 & \text{if } x \geq -2 \end{cases}$$

- (a) the domain is all real numbers
- (b) the x -intercepts are at the points $(-3, 0)$ and $(-1.5, 0)$; the y -intercept is at the point $(0, -3)$

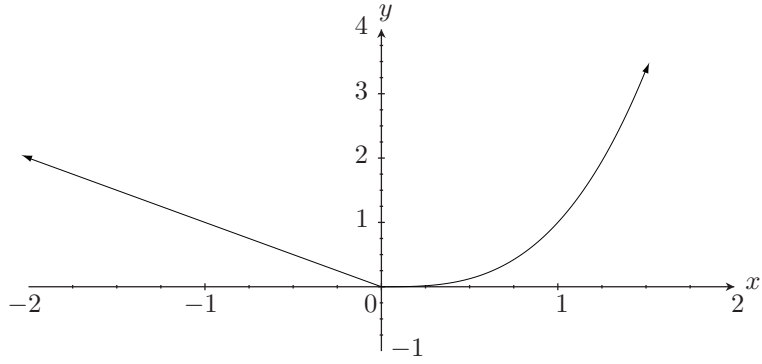


- (c)
- (d) the range is $(-\infty, 1]$

37. For the function:

$$f(x) = \begin{cases} |x| & \text{if } -2 \leq x < 0 \\ x^3 & \text{if } x > 0 \end{cases}$$

- (a) the domain is $[-2, \infty)$
- (b) the x -intercept is at the point $(0, 0)$; the y -intercept is at the point $(0, 0)$



(c)

(d) the range is $[0, \infty)$

41. A definition for the function is:

$$f(x) = \begin{cases} -x & \text{if } -1 \leq x < 0 \\ x/2 & \text{if } 0 \leq x \leq 2 \end{cases}$$

42. A definition for the function is:

$$f(x) = \begin{cases} x & \text{if } -1 \leq x \leq 0 \\ 1 & \text{if } 0 < x \leq 2 \end{cases}$$