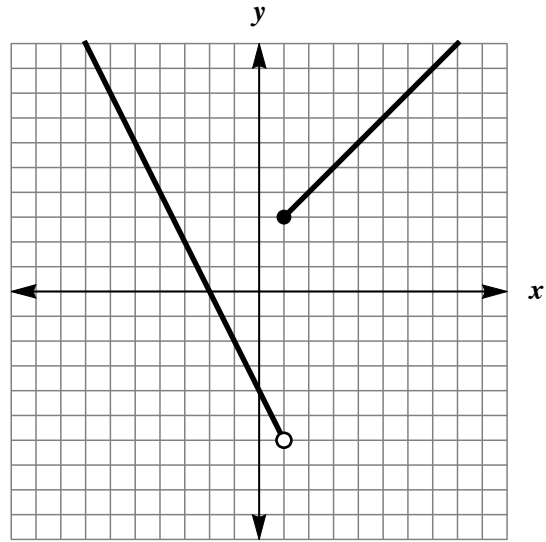


Quiz 1: Practice Version 2 (Solutions)

1. Sketch the following piecewise function:

$$f(x) = \begin{cases} -2x - 4 & x < 1 \\ x + 2 & x \geq 1 \end{cases}$$



2. For the following function,

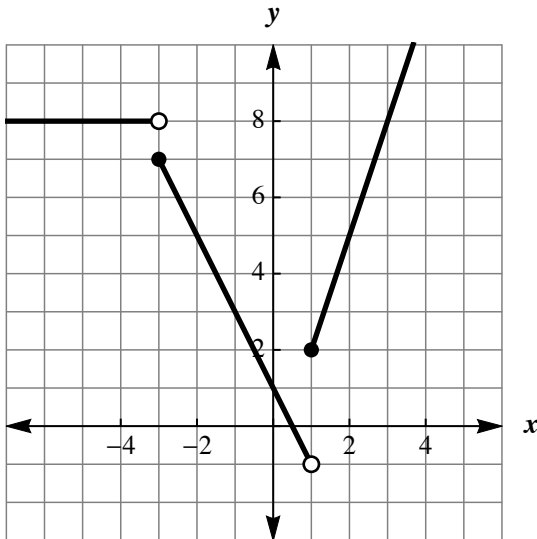
$$f(x) = \begin{cases} 2x + 7 & x \leq -4 \\ -3x - 1 & x > -4 \end{cases}$$

evaluate **a.** $f(-6) = -5$

b. $f(-4) = -1$

c. $f(4) = -13$

3. Write the equation for the following graph:



$$f(x) = \begin{cases} 8 & x < -3 \\ -2x + 1 & -3 < x < 1 \\ 3x - 1 & x \geq 1 \end{cases}$$

Continued...

Challenge Options (required for Honors)

4. Convert $(-2, -5)$ into polar coordinates. Show your work.

$$\theta = 180^\circ + \tan^{-1}\left(\frac{-5}{-2}\right) = 180^\circ + 68.1986^\circ = 248.2^\circ$$

$$r = \sqrt{(-2)^2 + (-5)^2} = \sqrt{29}$$

5. Convert $(225^\circ, 10)$ into rectangular (Cartesian) coordinates. Show your work.

$$x = 10 \cos(225^\circ) = -7.07107$$

$$y = 10 \sin(225^\circ) = -7.07107$$

6. Write an example of a polynomial function with at least five terms, even degree, and positive leading coefficient. Explain its end behavior.

An example :

$$3x^{12} - 2x^6 + 3x^3 - 5x + 10$$

$$\text{As } x \rightarrow +\infty, y \rightarrow +\infty$$

$$\text{As } x \rightarrow -\infty, y \rightarrow +\infty$$

7. Write an example of a polynomial function with four terms, a zero constant term, odd degree greater than 5, and negative leading coefficient. Explain its end behavior.

An example :

$$-3x^{11} - 2x^6 + 10x^2 - 6x$$

$$\text{As } x \rightarrow +\infty, y \rightarrow -\infty$$

$$\text{As } x \rightarrow -\infty, y \rightarrow +\infty$$