Practice evaluating piecewise functions:

For each function, evaluate at the integers from -5 to 5:
x = {-5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5}

1.

$$f(x) = \begin{cases} 2x + 3, & x < 0 \\ 3 - x, & x \geq 0 \end{cases}$$

2.

$$f(x) = \begin{cases} x + 6, & x \leq -4 \\ 2x - 4, & x > -4 \end{cases}$$

3.

$$f(x) = \begin{cases} \sqrt{4 + x}, & x < 0 \\ \sqrt{4 - x}, & x \geq 0 \end{cases}$$

4.

$$f(x) = \begin{cases} 1 - (x - 1)^2, & x \leq 2 \\ \sqrt{x - 2}, & x > 2 \end{cases}$$

5.

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

6.

$$g(x) = \begin{cases} x + 5, & x \leq -3 \\ -2, & -3 < x < 1 \\ 5x - 4, & x \geq 1 \end{cases}$$

7. A "probability mass function" gives the probability that a random process

gives a result equal to x. This one is defined as: $p(x) = \begin{cases} 0.30, x = 0 \\ 0.35, x = 1 \\ 0.25, x = 2 \\ 0.10, x = 3 \\ 0, otherwise \end{cases}$.

   a. What is the probability that $x = 0$?

   b. What is the probability that $x = 1$?

   c. What is the probability that $x = 4$?

   d. What is the probability that $x \leq 2$?

8. A function is defined as $f(x) = \begin{cases} 0, & x < 0 \\ 3x, 0 \leq x \leq 10. \\ k, x > 10 \end{cases}$

   Show the work needed to find the value of k that makes this continuous.

9. A function is defined as $g(t) = \begin{cases} t + 1, t < 2 \\ at + 5, t \geq 2 \end{cases}$

   Show the work needed to find the value of a that makes this continuous.

10. A function is defined as $h(x) = \begin{cases} 3x + b, x < -3 \\ -2x - 7, x \geq -3 \end{cases}$

   Show the work needed to find the value of b that makes this continuous.