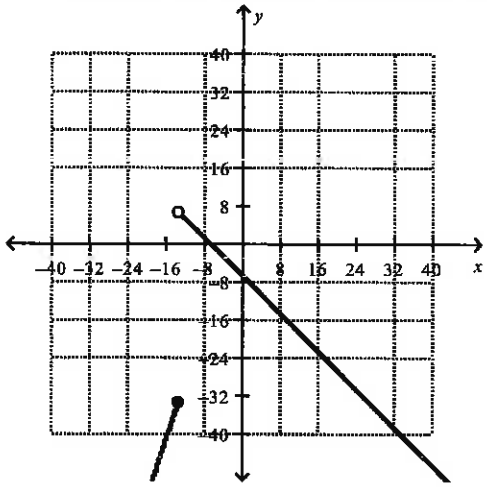
Piecewise Functions Practice

Quiz

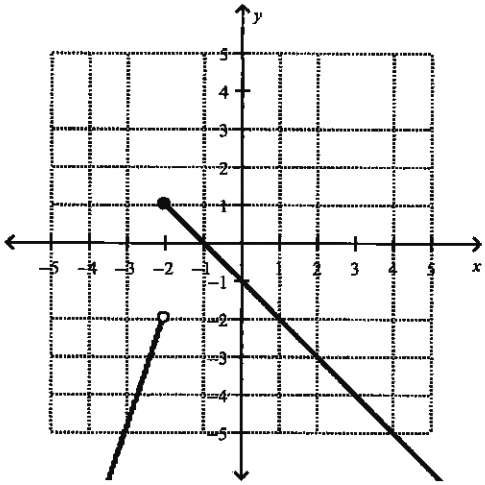
1. Determine the domain, range of the function shown below. Use both set notation and interval notation.



2. Find f(14) for the function defined by

$$f(x) = \begin{cases} 13x - 4, & x < 15 \\ -3x + 9, & 15 \le x \le 19 \\ 6x - 3, & x > 19 \end{cases}$$

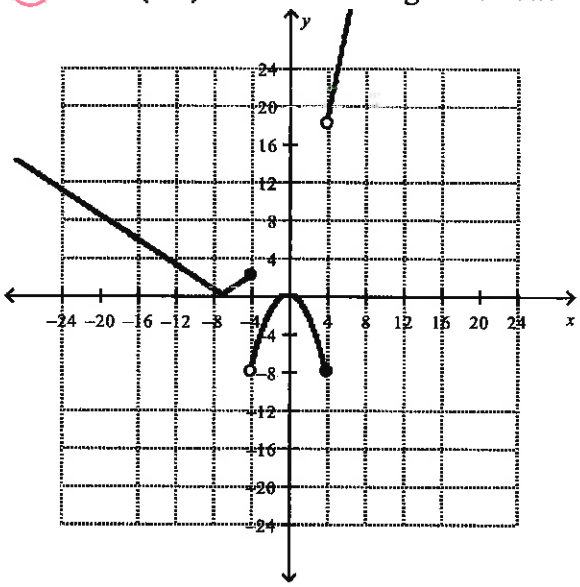
3. Write an equation for the piecewise function graphed below.



4. Find f(12) for the given piecewise function:

$$f(x) = \begin{cases} -18x + 20, & x < 19 \\ -16x^2, & x \ge 19 \end{cases}$$

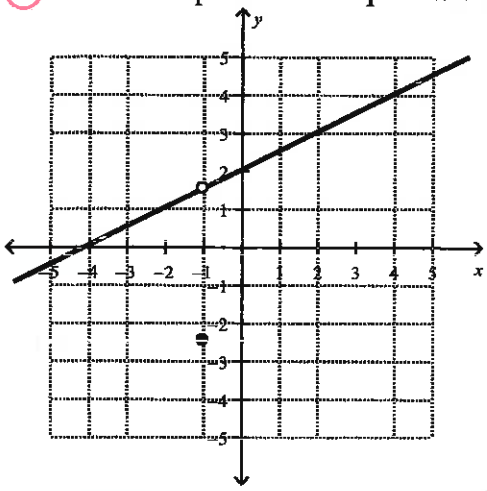
5. Find f(−18) for the function given below.



6. Is the function continuous at $x = -17$?

$$f(x) = \begin{cases} 20x + 1, & x < -17 \\ -10x^2, & x \ge -17 \end{cases}$$

7. Write an equation for the piecewise function graphed below.



Choices:

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

B) $f(x) = \begin{cases} 0.5x+2, & x<-1 \\ 0.5x+2, & x>-1 \end{cases}$

C) $f(x) = \begin{cases} 0.5x+2, & x<-1 \\ -2.5, & x=-1 \\ 0.5x+2, & x>-1 \end{cases}$

8. The function f is defined below. For what value of k, if any, is f continuous at $x = 2$?

hint: let $x=2$ and solve for k

$$f(x) = \begin{cases} -2x+k, & \text{for } x \le 2 \\ -9x+15, & \text{for } x > 2 \end{cases}$$

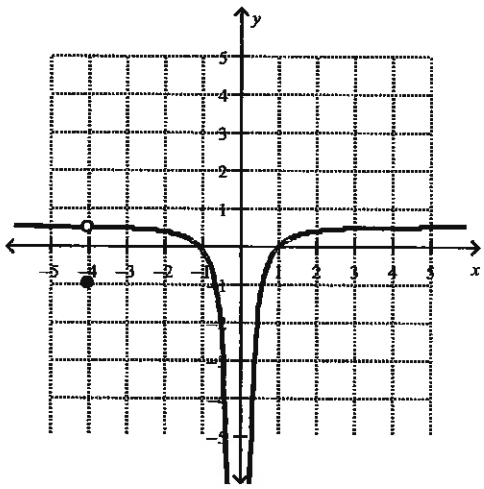
9. Find $f(6)$ for the function defined by

$$f(x) = \begin{cases} 10, & x<-4 \\ 16, & -4 \le x \le 9 \\ -13, & x>9 \end{cases}$$

10. Find $f(3)$ for the function defined by

$$f(x) = \begin{cases} -11x^2+11x, & x<12 \\ -12x-4, & x=12 \\ -19, & x>12 \end{cases}$$

11. Find $f(-4)$ for the function given below.



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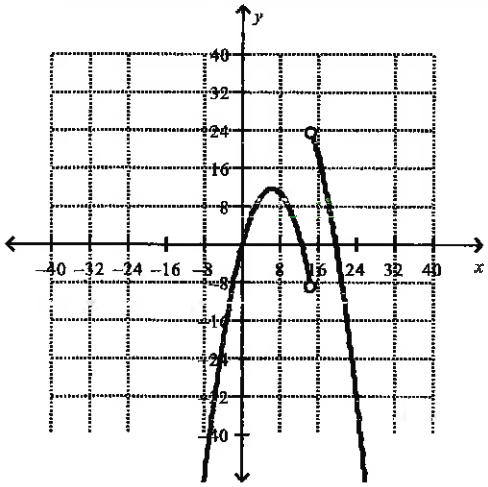
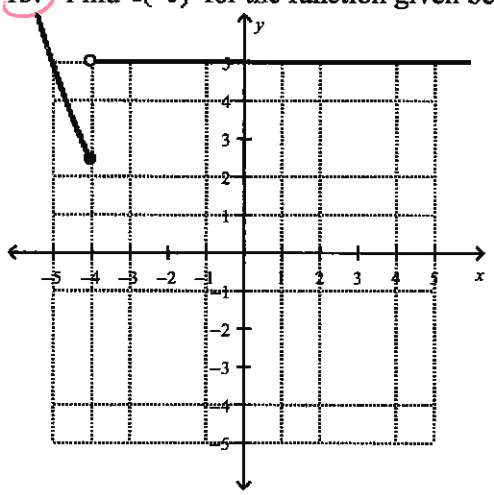
12. Determine the domain of the function shown below. Use both set notation and interval notation.



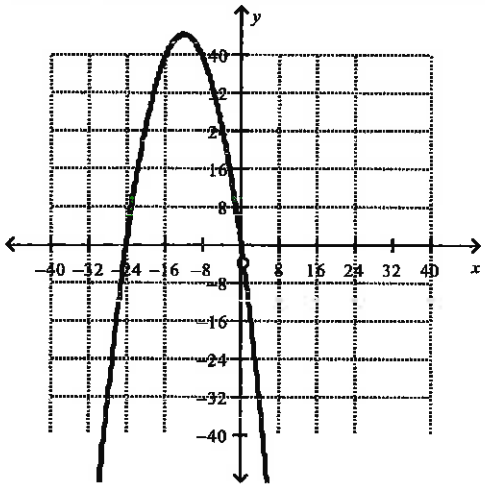
13. Find f(−5) for the function given below.



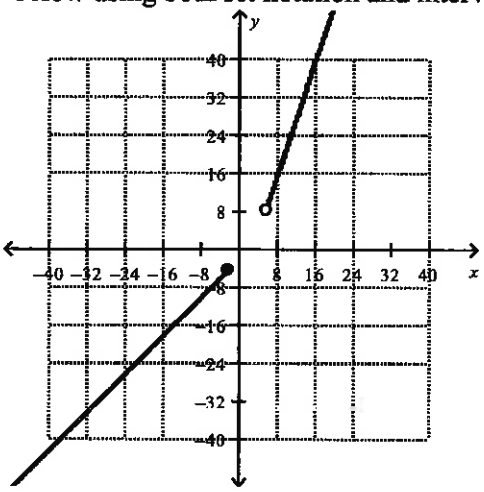
14. Find f(−19) for the given piecewise function:

$$f(x) = \begin{cases} -7x^{-3} - 9, & x < -19 \\ -2x, & x \geq -19 \end{cases}$$

15. Determine the domain of the function shown below. Use both set notation and interval notation.



16. Determine the domain of the function shown below using both set notation and interval notation.



17. Find f(−13) for the given piecewise function:

$$f(x) = \begin{cases} 4x^2 + 3, & x \leq -11 \\ 16, & x > -11 \end{cases}$$

18. The function f is defined below. For what value of k, if any, is f continuous at $x = 3$?

$$f(x) = \begin{cases} -16x - k, & for\ x \leq 3 \\ 20x - 9, & for\ x > 3 \end{cases}$$

Piecewise Functions

Patrice

Quiz

Key

(1) dom $\mathbb{R}$ ✓

range $]-\infty, 8[$ ✓

(2) $f(14) = 178$ ✓

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

(4) $f(14) = -196$ ✓

(5) $f(-18) \approx 7.2$ (estimate) ✓

(6) $20(-17)+1 = -339$

$-10(-17)^2 = -2890$

Not continuous ✓

(7) Choice C ✓

(8) $-2(2)+k = -9(2)+15$

$-4+k = -18+15$

$-4+k = -3$ ✓

$k = 1$

(9) $f(6) = 16$ ✓

(10) $f(3) = -66$ ✓

(11) $f(-4) = -1$ ✓

(12) dom $]-\infty, 15[\cup]15, +\infty[$ ✓

range $]-\infty, 24[$ ✓

(13) $f(-5) = 5$ ✓

(14) $f(-19) = 38$ ✓

(15) dom ✓

$]-\infty, 0[\cup]0, +\infty[$

(16) dom

$]-\infty, -2] \cup]6, +\infty[$ ✓

(17) $f(-13) = 679$ ✓

(18)

$-16(3)-k = 20(3)-9$

$-48-k = 51$

$-k = 99$

$k = -99$ ✓