

Find the domain of the function.

$$1) f(x) = \frac{x}{x^2 + 19}$$

$$2) h(x) = \frac{x - 1}{x^3 - 64x}$$

$$3) \frac{x}{\sqrt{x - 3}}$$

Given functions f and g , perform the indicated operations.

$$4) f(x) = 8x - 5, \quad g(x) = 5x - 2$$

Find $f - g$.

$$5) f(x) = 3x^2 - 7x, \quad g(x) = x^2 - 3x - 28$$

Find $\frac{f}{g}$.

$$6) f(x) = \sqrt{3x + 2}, \quad g(x) = \sqrt{25x - 9}$$

Find fg .

Find the domain of the indicated combined function.

$$7) \text{ Find the domain of } (fg)(x) \text{ when } f(x) = \sqrt{5x + 8} \text{ and } g(x) = \sqrt{6x - 7}.$$

For the given functions f and g , find the indicated composition.

$$8) f(x) = 15x^2 - 10x, \quad g(x) = 12x - 5$$

$(f \circ g)(2)$

$$9) f(x) = \frac{5}{x - 8}, \quad g(x) = \frac{4}{5x}$$

$(f \circ g)(x)$

$$10) f(x) = 4x^2 + 5x + 4, \quad g(x) = 5x - 5$$

$(g \circ f)(x)$

Find the domain of the composite function $f \circ g$.

$$11) f(x) = 4x + 40, \quad g(x) = x + 7$$

$$12) f(x) = \frac{5}{x + 9}, \quad g(x) = x + 5$$

$$13) f(x) = x + 1, \quad g(x) = \frac{8}{x + 10}$$

Find functions f and g so that $h(x) = (f \circ g)(x)$.

14) $h(x) = |3x + 1|$

15) $h(x) = \frac{7}{x^2} + 4$

Determine which two functions are inverses of each other.

16) $f(x) = 7x$ $g(x) = \frac{x}{7}$ $h(x) = \frac{7}{x}$

Find the inverse of the one-to-one function.

17) $f(x) = \sqrt[3]{x - 5}$

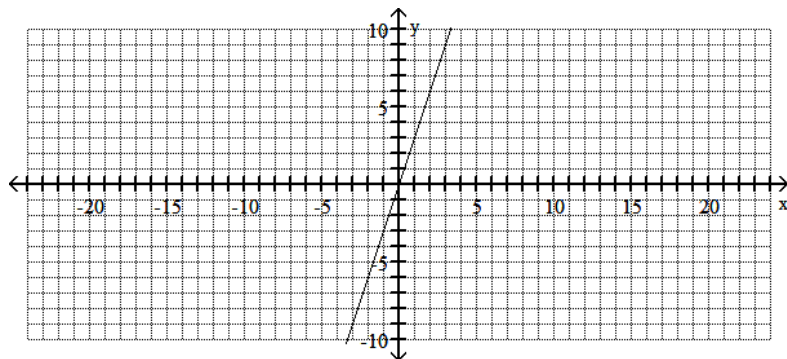
18) $f(x) = -4x - 6$

19) $f(x) = \frac{5}{3x + 7}$

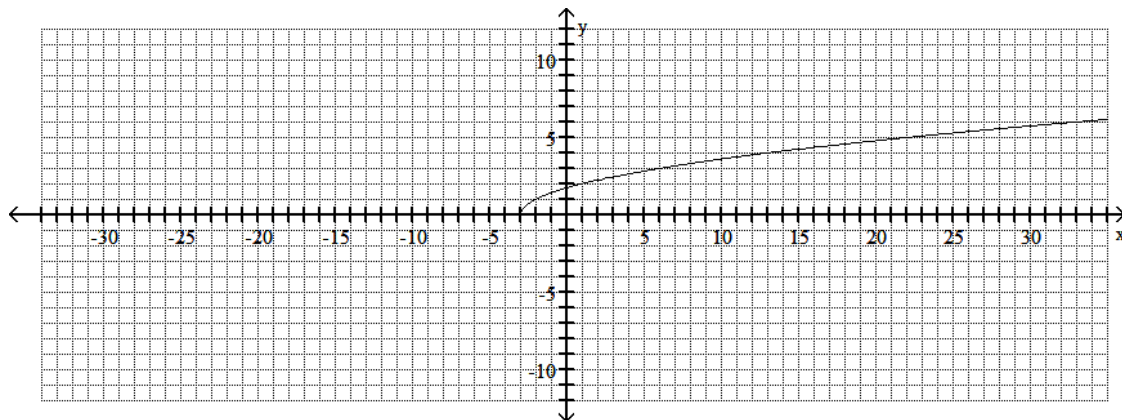
20) $f(x) = \sqrt{x - 6}$

Use the graph of f to draw the graph of its inverse function.

21)



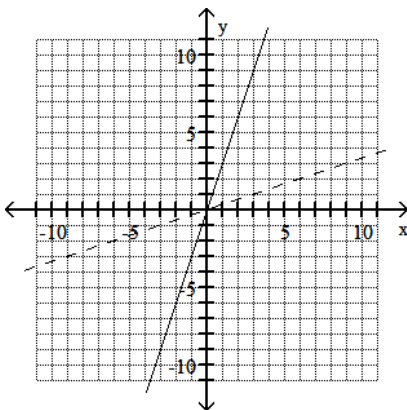
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Answer Key

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- 1) $(-\infty, \infty)$
- 2) $(-\infty, -8) \cup (-8, 0) \cup (0, 8) \cup (8, \infty)$
- 3) $(3, \infty)$
- 4) $3x - 3$
- 5) $\frac{3x^2 - 7x}{x^2 - 3x - 28}$
- 6) $(\sqrt{3x+2})(\sqrt{25x-9})$
- 7) Domain: $\left[\frac{7}{6}, \infty\right)$
- 8) 5225
- 9) $\frac{25x}{4 - 40x}$
- 10) $20x^2 + 25x + 15$
- 11) $(-\infty, \infty)$
- 12) $(-\infty, -14)$ or $(-14, \infty)$
- 13) $(-\infty, -10)$ or $(-10, \infty)$
- 14) $f(x) = |x|$, $g(x) = 3x + 1$
- 15) $f(x) = x + 4$, $g(x) = 7/x^2$
- 16) $f(x)$ and $g(x)$
- 17) $f^{-1}(x) = x^3 + 5$
- 18) $f^{-1}(x) = \frac{x+6}{-4}$
- 19) $f^{-1}(x) = \frac{5}{3x} - \frac{7}{3}$
- 20) $f^{-1}(x) = x^2 + 6$
- 21)



Answer Key

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22)

