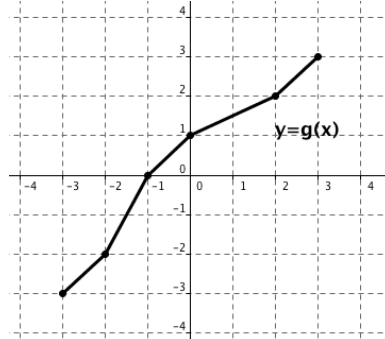
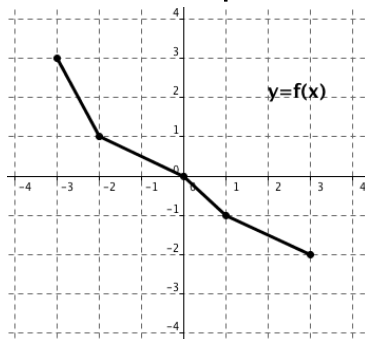


A2: Unit 7 Review

Use the graphs to evaluate, if possible.



1. $(f+g)(-2)$

2. $(f-g)(3)$

3. $(f \circ g)(-2)$

4. $(fg)(-2)$

5. $\left(\frac{g}{f}\right)(0)$

6. $(f \circ f)(3)$

Determine if $f(x)$ and $g(x)$ are inverse functions algebraically.

7. $f(x) = \sqrt{x-4}$ $g(x) = x^2 + 4$

8. $f(x) = 2x - 5$ $g(x) = \frac{1}{2}x + \frac{5}{2}$

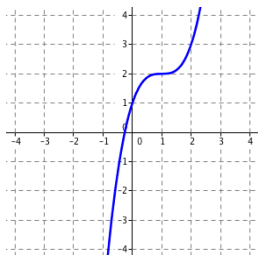
Given $f(x)$, find $f^{-1}(x)$.

9. $f(x) = \sqrt[3]{x-7} + 4$

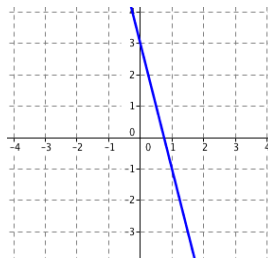
10. $f(x) = \frac{2}{3}x - 1$

Sketch the inverse function.

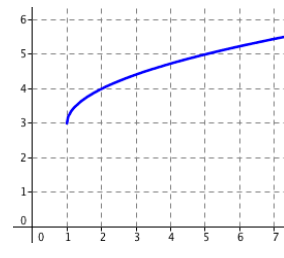
11.



12.



13.



14. Does $f(x)$ have an inverse function? Explain your reasoning.

a) $f(x) = \{ (2, 3), (4, -8), (5, -6), (9, 8), (-3, 3) \}$

b) $f(x) = -x^2 + 2x - 4$

c) $f(x) = \sqrt{2x-5}$

Find the indicated expression.

$f(x) = -x^2 + 4x - 3$

$g(x) = \sqrt{3x+24}$

$m(x) = x + 3$

15. $(f-m)(x)$

16. $f(m(x))$

17. $(g \circ m)(x)$

18. $(m \circ f)(x)$

19. $\left(\frac{m}{f}\right)(x)$

20. $(f \cdot m)(x)$

Evaluate (if possible).

$$f(x) = -x^2 + 4x - 3$$

$$g(x) = \sqrt{3x+26}$$

$$h(x) = \frac{5}{x+3}$$

$$m(x) = -x$$

21. $(h + g)(-3)$

22. $(f - m)(-2)$

23. $(m \circ f)(2)$

Solve algebraically.

24.
 $x - 4y = -12$
 $3x + 2y = 20$

25.
 $2x + y - z = 5$
 $x + 4y + 2z = 16$
 $15x + 6y - 2z = 12$

26.
 $x + y - z = 6$
 $3x - 2y + z = -5$
 $x + 3y - 2z = 14$

Solve graphically.

27.
 $x + 2y = 6$
 $2x + 4y = 15$

28.
 $2x - y > 6$
 $3 < x \leq 5$

29. Set up a system of equations and solve algebraically.

At the amusement park, Mrs. Delvalle bought 3 sodas and 4 hotdogs for \$17. At the same time, Mrs. Goodwin bought 2 sodas and 5 hotdogs for \$16. If Mrs. Stillman buys one soda and two hot dogs, what is her total price?

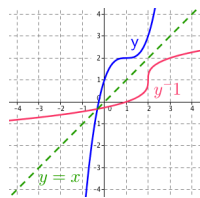
30. SET UP a system of equations but DO NOT SOLVE.

The three American universities with the greatest endowments are Harvard, Yale and Princeton. Their combined endowments are \$12.09 billion. Together, Yale and Princeton have \$.0.53 billion more in endowments than Harvard. Princeton's endowments trail Harvard's by \$2.70 billion. What are the endowments of each of these universities?

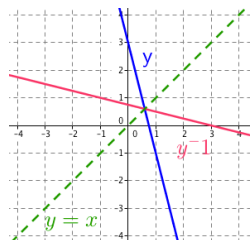
ANSWERS

1. -1
2. -5
3. 1
4. -2
5. undefined
6. -2
7. No; $(f \circ g)(x) = |x|$
8. Yes, both $(f \circ g)(x) = x$ and $(g \circ f)(x) = x$
9. $f^{-1}(x) = (x - 4)^3 + 7$
10. $f^{-1}(x) = \frac{3x+3}{2}$

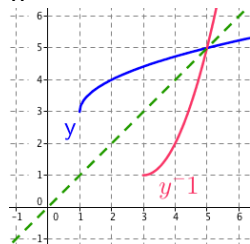
11.



12.



13. II



14. a) No, since $f(x)$ contains the points $(2, 3)$ and $(-3, 3)$ $f(x)$ is not one-to-one and does not have an inverse function.

b) No, $f(x)$ is a parabola. A parabola is not one-to-one and does not have an inverse function.

c) Yes, $f(x)$ is a one-to-one function.

15. $-x^2 + 3x - 6$

16. $-x^2 - 2x$

17. $\sqrt{3x + 33}$

18. $-x^2 + 4x$

19. $\frac{x+3}{-x^2+4x-3}$

20. $-x^3 + x^2 + 9x - 9$

21. undefined

22. -1

23. -1

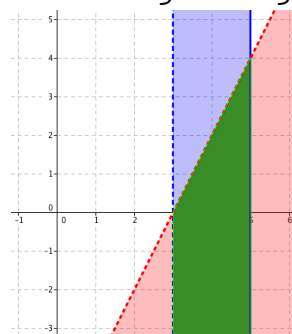
24. $(4, 4)$

25. $(-2, 6, -3)$

26. $(1, 3, -2)$

27. no solution

28. Answer = green region



29. \$7

30. Let H=Harvard, Y=Yale, P=Princeton

$$\begin{cases} H + V + P = 12.09 \\ Y + P = 0.53 + H \\ P + 2.7 = H \end{cases}$$