

## WS Inverse Review 1

**Find the inverse of each function.**

1)  $f(x) = 3x + 6$

2)  $g(x) = \frac{9x - 8}{7}$

3)  $f(x) = 2 + \frac{3}{4}x$

4)  $f(x) = \frac{5}{3}x - \frac{5}{3}$

5)  $f(x) = \frac{1}{2}x - \frac{5}{2}$

6)  $g(x) = \frac{x + 1}{4}$

7)  $f(x) = -2x + 5$

8)  $f(x) = \frac{25 - 2x}{5}$

9)  $f(x) = -\frac{1}{6}x + \frac{2}{3}$

10)  $g(n) = -\frac{4}{7}n + \frac{16}{7}$

11)  $g(n) = \sqrt[3]{\frac{-n + 2}{2}}$

12)  $h(n) = n^5 - 3$

13)  $g(x) = -4x - 4$

$$14) f(x) = -\frac{5}{8}x - \frac{5}{2}$$

$$15) g(x) = (x - 1)^5 - 1$$

$$16) h(x) = 3 + \frac{1}{2}x$$

$$17) f(x) = 4x - 12$$

$$18) g(x) = -2(x + 3)^5$$

$$19) f(x) = \sqrt[3]{x + 1} + 2$$

$$20) g(n) = \frac{5n + 20}{6}$$

$$21) g(x) = -\frac{4}{x} - 1$$

$$22) g(x) = \frac{4}{x + 1} - 1$$

$$23) f(n) = \frac{1}{-n + 3} + 1$$

$$24) h(x) = \frac{1}{x - 3}$$

$$25) f(x) = \frac{4}{x - 2} - 2$$

$$26) h(x) = -\frac{2}{x}$$

$$27) f(x) = \frac{4}{x - 3} + 1$$

$$28) g(x) = \frac{1}{x+3} - 2$$

$$29) h(n) = -\frac{3}{-n+1} + 2$$

$$30) g(x) = -\frac{3}{x} - 2$$

**Algebraically prove these functions are inverses.**

$$31) f(x) = (x-3)^3 \\ g(x) = \sqrt[5]{-x+3}$$

$$32) g(x) = -\frac{3}{x-2} + 3 \\ f(x) = -\frac{3}{x-3} + 2$$

$$33) f(x) = 2 - x^5 \\ g(x) = \sqrt[5]{-x+2}$$

$$34) f(n) = \frac{3}{4}n + \frac{9}{4} \\ g(n) = -4 + \frac{2}{3}n$$

$$35) h(n) = 5n - 20 \\ f(n) = \frac{20+n}{5}$$

$$36) g(n) = \frac{1}{n-1} + 2 \\ f(n) = \frac{3}{-n-2} - 2$$

$$37) f(x) = -x^3 + 1 \\ h(x) = 2(x+2)^5$$

$$38) f(n) = \frac{1}{n-1} - 2 \\ g(n) = -\frac{1}{n-1} + 3$$

$$39) \begin{aligned} h(x) &= \sqrt[5]{x-1} \\ f(x) &= -2 + 2x^3 \end{aligned}$$

$$40) \begin{aligned} f(n) &= \frac{1}{n+1} \\ g(n) &= \frac{1}{n} - 1 \end{aligned}$$

$$41) \begin{aligned} h(n) &= \sqrt[3]{n+2} + 2 \\ f(n) &= -n^3 + 1 \end{aligned}$$

$$42) \begin{aligned} f(x) &= (x-1)^3 + 2 \\ g(x) &= \sqrt[3]{-\frac{x}{2}} \end{aligned}$$

$$43) \begin{aligned} f(x) &= \frac{3}{x+1} + 1 \\ g(x) &= \frac{4}{-x-2} - 2 \end{aligned}$$

$$44) \begin{aligned} f(n) &= \frac{4}{n+1} \\ g(n) &= \frac{4}{n} + 1 \end{aligned}$$

$$45) \begin{aligned} g(n) &= \sqrt[3]{n+2} \\ f(n) &= n^3 - 2 \end{aligned}$$

$$46) \begin{aligned} f(x) &= -\frac{3}{x} + 3 \\ g(x) &= \frac{3}{-x+3} \end{aligned}$$

$$47) \begin{aligned} g(n) &= -\frac{3}{n+1} + 1 \\ f(n) &= -\frac{3}{n-1} - 1 \end{aligned}$$

$$48) \begin{aligned} g(n) &= \frac{3}{-n-2} + 1 \\ f(n) &= -\frac{3}{n-1} - 2 \end{aligned}$$

$$49) g(x) = \frac{3}{x-1} - 3$$

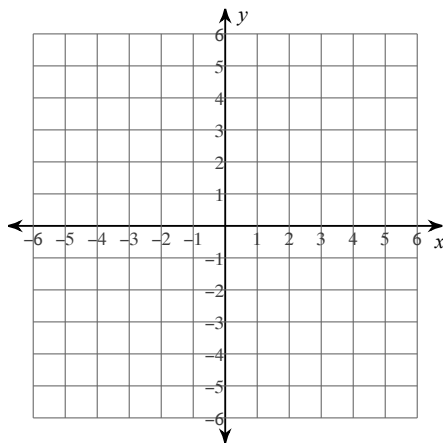
$$f(x) = -\frac{3}{-x-3} + 1$$

$$50) g(n) = 2n^3$$

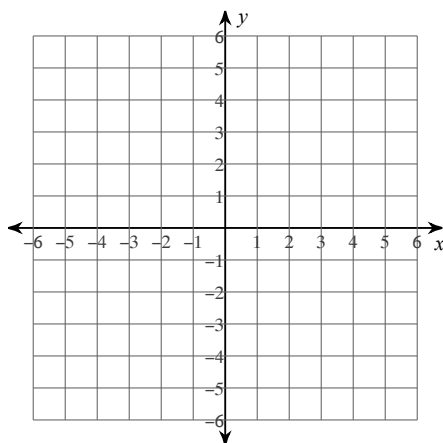
$$f(n) = \sqrt[5]{n+1} - 1$$

Graphically find the inverse of these functions.

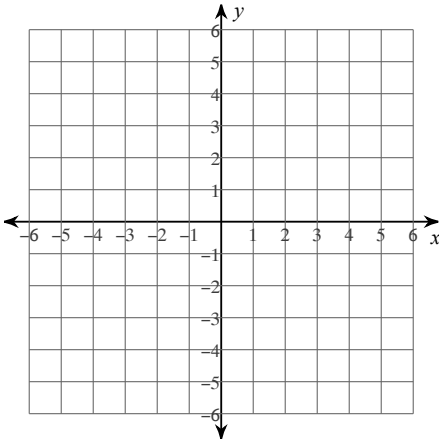
$$51) f(x) = -\frac{4}{x+2} + 1$$



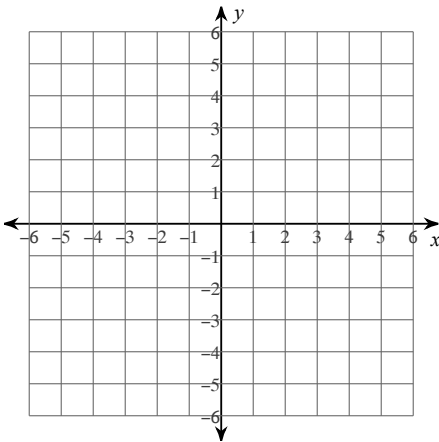
$$52) g(x) = \sqrt[5]{x+2} - 2$$



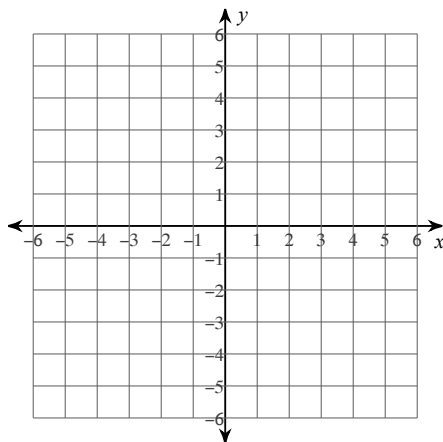
53)  $g(x) = \frac{1}{x} - 3$



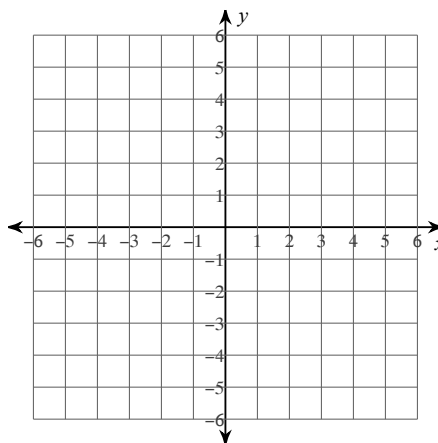
54)  $f(x) = \sqrt[5]{x-2} + 1$



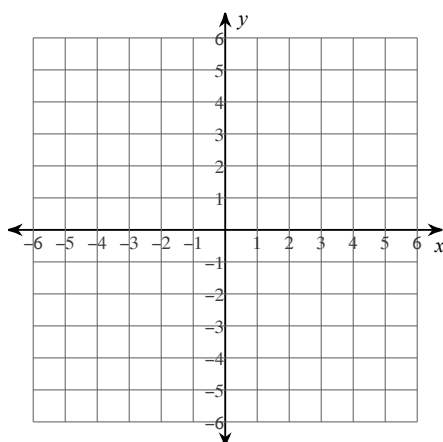
$$55) f(x) = -2x^5 - 3$$



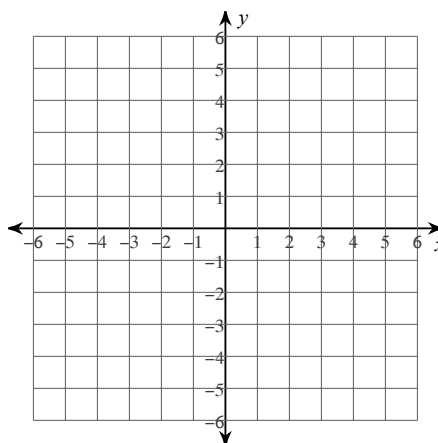
$$56) g(x) = x^3$$



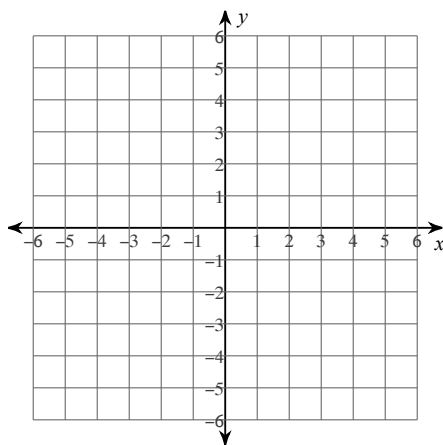
$$57) f(x) = \frac{2}{x+2} + 2$$



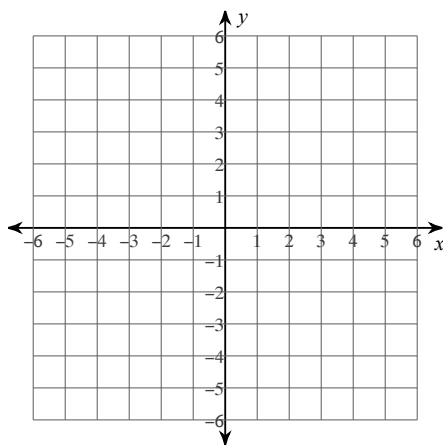
$$58) f(x) = 3 - x^3$$



59)  $h(x) = -\sqrt[5]{x} + 2$



60)  $h(x) = \sqrt[5]{x-1} - 1$





## Answers to WS Inverse Review 1

1)  $f^{-1}(x) = \frac{-6+x}{3}$

2)  $g^{-1}(x) = \frac{7x+8}{9}$

3)  $f^{-1}(x) = \frac{4}{3}x - \frac{8}{3}$

4)  $f^{-1}(x) = 1 + \frac{3}{5}x$

5)  $f^{-1}(x) = 2x + 5$

6)  $g^{-1}(x) = 4x - 1$

7)  $f^{-1}(x) = \frac{-x+5}{2}$

8)  $f^{-1}(x) = \frac{-5x+25}{2}$

9)  $f^{-1}(x) = -6x + 4$

10)  $g^{-1}(n) = 4 - \frac{7}{4}n$

11)  $g^{-1}(n) = -2n^3 + 2$

12)  $h^{-1}(n) = \sqrt[5]{n+3}$

13)  $g^{-1}(x) = -1 - \frac{1}{4}x$

14)  $f^{-1}(x) = -4 - \frac{8}{5}x$

15)  $g^{-1}(x) = \sqrt[5]{x+1} + 1$

16)  $h^{-1}(x) = 2x - 6$

17)  $f^{-1}(x) = \frac{12+x}{4}$

18)  $g^{-1}(x) = \frac{-6 - \sqrt[5]{16x}}{2}$

19)  $f^{-1}(x) = (x-2)^3 - 1$

20)  $g^{-1}(n) = \frac{-20+6n}{5}$

21)  $g^{-1}(x) = \frac{4}{-x-1}$

22)  $g^{-1}(x) = -\frac{4}{-x-1} - 1$

23)  $f^{-1}(n) = -\frac{1}{n-1} + 3$

24)  $h^{-1}(x) = \frac{1}{x} + 3$

25)  $f^{-1}(x) = \frac{4}{x+2} + 2$

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

27)  $f^{-1}(x) = \frac{4}{x-1} + 3$

28)  $g^{-1}(x) = \frac{1}{x+2} - 3$

29)  $h^{-1}(n) = \frac{3}{n-2} + 1$

30)  $g^{-1}(x) = \frac{3}{-x-2}$

31) No

32) Yes

33) Yes

34) No

35) Yes

36) No

37) No

38) No

39) No

40) Yes

41) No

42) No

43) No

44) No

45) Yes

46) Yes

47) Yes

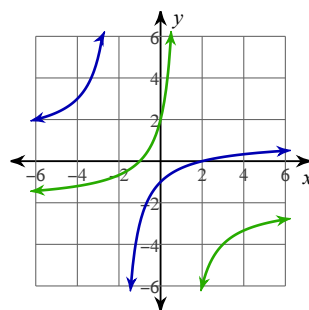
48) Yes

49) Yes

50) No

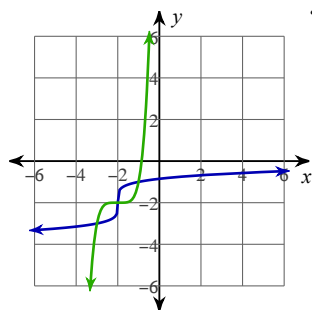
51)

$f^{-1}(x) = -\frac{4}{x-1} - 2$



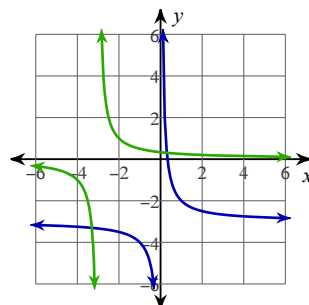
52)

$g^{-1}(x) = (x+2)^5 - 2$



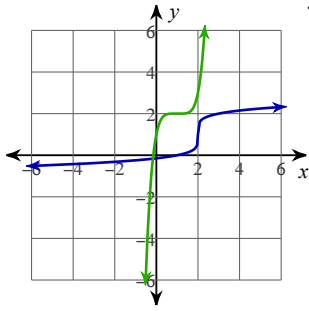
53)

$g^{-1}(x) = -\frac{1}{-x-3}$



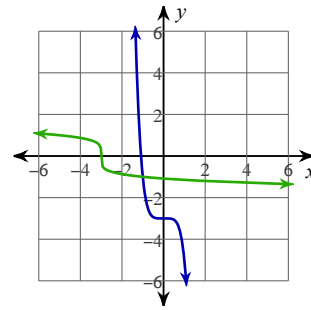
54)

$$f^{-1}(x) = (x-1)^5 + 2$$



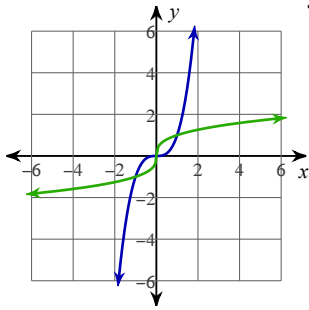
55)

$$f^{-1}(x) = \sqrt[5]{\frac{-x-3}{2}}$$



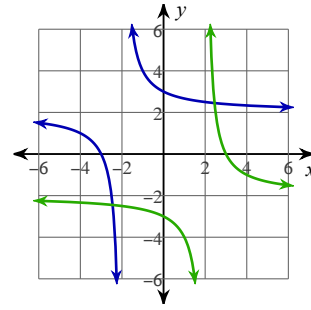
56)

$$g^{-1}(x) = \sqrt[3]{x}$$



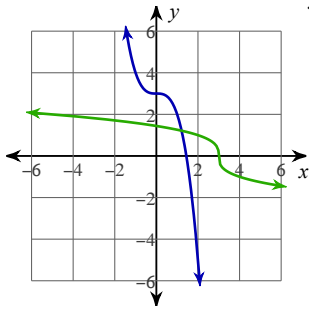
57)

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



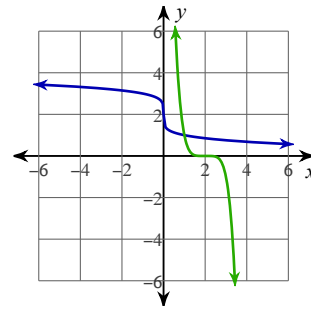
58)

$$f^{-1}(x) = \sqrt[3]{-x+3}$$



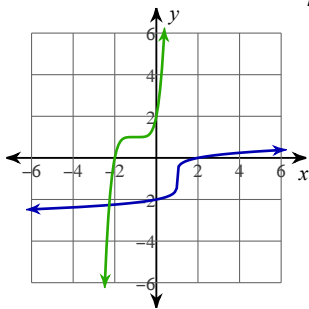
59)

$$h^{-1}(x) = -(x-2)^5$$



60)

$$h^{-1}(x) = (x+1)^5 + 1$$



## WS Inverse Review 1

**Find the inverse of each function.**

1)  $g(n) = n + 4$

2)  $g(x) = \frac{2}{5}x - 2$

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

4)  $f(x) = -5x$

5)  $g(x) = \frac{15 - 5x}{3}$

6)  $g(n) = \frac{10 - 5n}{2}$

7)  $f(x) = 5x + 5$

8)  $g(n) = \frac{n - 2}{6}$

9)  $f(x) = \frac{x}{2}$

10)  $g(n) = -3 - \frac{5}{2}n$

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

12)  $f(x) = \sqrt[5]{x + 2} + 2$

$$13) f(x) = \sqrt[3]{\frac{x+1}{2}}$$

$$14) g(x) = 5x - 4$$

$$15) g(x) = -\frac{3}{4}x + \frac{11}{4}$$

$$16) f(x) = -\frac{1}{8}x + \frac{1}{2}$$

$$17) g(x) = -2x - 2$$

$$18) f(n) = \frac{-4-n}{2}$$

$$19) g(n) = (n-1)^5 + 1$$

$$20) g(n) = -3n - 4$$

$$21) g(x) = -\frac{2}{x-1} + 3$$

$$22) f(n) = \frac{3}{-n+3} + 2$$

$$23) h(n) = \frac{2}{-n+2} - 2$$

$$24) f(x) = -\frac{4}{x-1} + 1$$

$$25) f(x) = \frac{2}{x}$$

$$26) f(n) = \frac{1}{n-1}$$

$$27) f(x) = \frac{3}{x+1} + 3$$

$$28) g(n) = \frac{4}{n-1}$$

$$29) f(n) = \frac{3}{n+1} + 1$$

$$30) g(n) = -\frac{1}{n} - 2$$

**Algebraically prove these functions are inverses.**

$$31) h(x) = \frac{1}{x} + 2$$
$$f(x) = -\frac{1}{-x+2}$$

$$32) g(x) = -2x^3 + 3$$
$$f(x) = \sqrt[5]{x+1}$$

$$33) f(x) = \frac{3}{5}x - 3$$
$$g(x) = 5x + 5$$

$$34) g(x) = \frac{-3x - 15}{2}$$
$$f(x) = \frac{-15 - 2x}{3}$$

$$35) f(x) = \frac{-5x + 25}{8}$$
$$g(x) = \frac{-3x + 15}{10}$$

$$36) f(x) = 3 - \frac{8}{5}x$$
$$h(x) = 2 + \frac{1}{2}x$$

$$37) h(x) = 2x - 4$$
$$f(x) = -x - 4$$

$$38) f(n) = \frac{1}{n-2} - 2$$
$$g(n) = -\frac{3}{-n-2}$$

$$39) \begin{aligned} f(x) &= (x-1)^3 \\ g(x) &= \sqrt[3]{x+1} \end{aligned}$$

$$40) \begin{aligned} f(x) &= \frac{2}{x+2} \\ g(x) &= \frac{2}{x} - 2 \end{aligned}$$

$$41) \begin{aligned} f(x) &= \frac{4}{x-2} + 3 \\ g(x) &= -\frac{4}{x} + 1 \end{aligned}$$

$$42) \begin{aligned} g(n) &= \sqrt[3]{\frac{n+3}{2}} \\ f(n) &= 2(n-3)^3 \end{aligned}$$

$$43) \begin{aligned} f(x) &= \sqrt[3]{x-3} - 2 \\ g(x) &= (x+2)^3 + 3 \end{aligned}$$

$$44) \begin{aligned} f(x) &= \frac{1}{x-2} \\ g(x) &= \frac{3}{x-1} - 1 \end{aligned}$$

$$45) \begin{aligned} g(x) &= 2 + x^3 \\ f(x) &= (x+1)^3 + 1 \end{aligned}$$

$$46) \begin{aligned} f(n) &= -\sqrt[5]{n+1} \\ g(n) &= \sqrt[3]{\frac{-n+3}{2}} \end{aligned}$$

$$47) \begin{aligned} g(x) &= 3 + 2x^5 \\ f(x) &= \sqrt[5]{\frac{x-3}{2}} \end{aligned}$$

$$48) \begin{aligned} g(x) &= \frac{5x+10}{4} \\ f(x) &= \frac{-3x-19}{4} \end{aligned}$$

$$49) g(x) = -\frac{1}{x+2} + 1$$

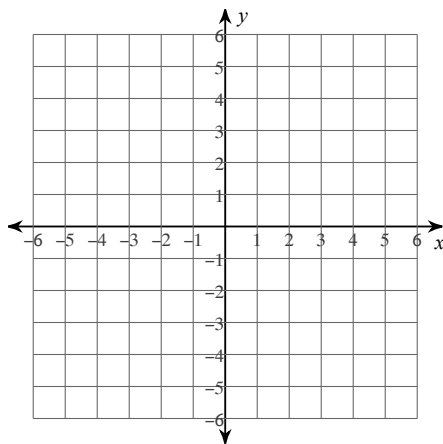
$$f(x) = \frac{1}{x-2}$$

$$50) f(x) = \frac{1}{x} - 2$$

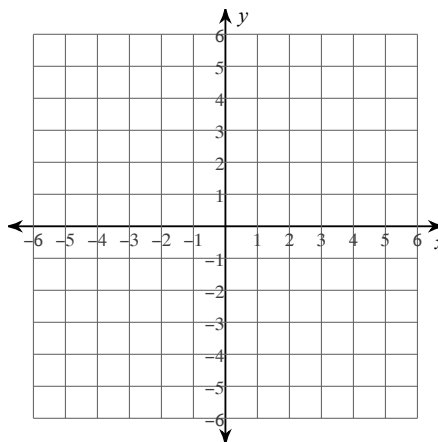
$$g(x) = \frac{1}{x+2} + 1$$

Graphically find the inverse of these functions.

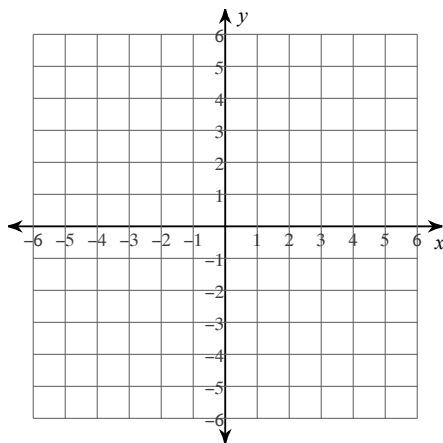
$$51) h(x) = -x^3 - 2$$



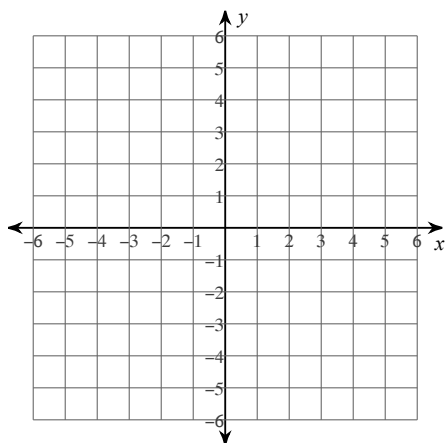
$$52) f(x) = 2x^3 - 2$$



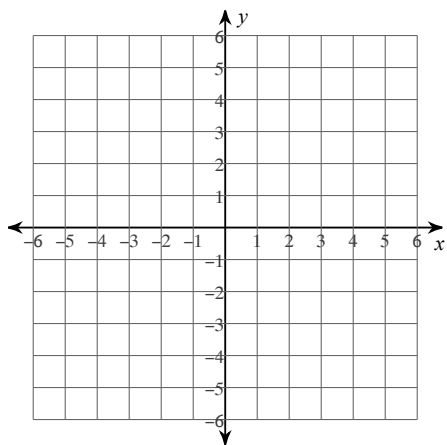
$$53) f(x) = \frac{3}{x} + 1$$



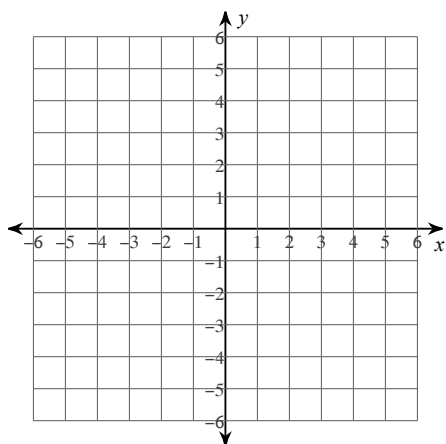
$$54) g(x) = \sqrt[5]{x-2} + 1$$



$$55) g(x) = \frac{1}{x-2} - 2$$

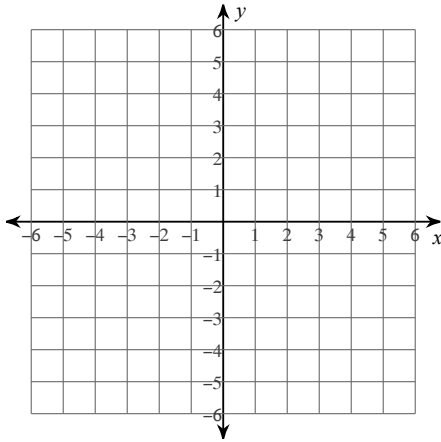


$$56) g(x) = \sqrt[5]{x}$$

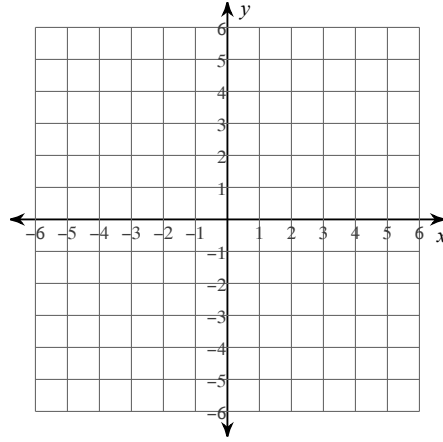




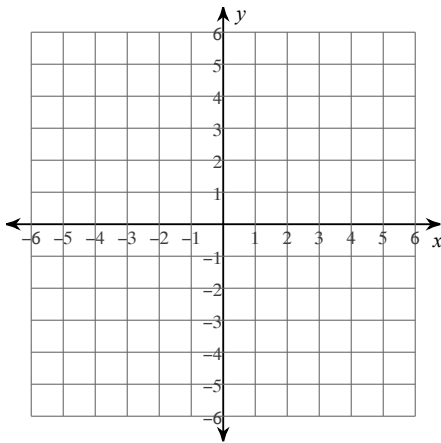
$$57) f(x) = \frac{1}{-x + 3}$$



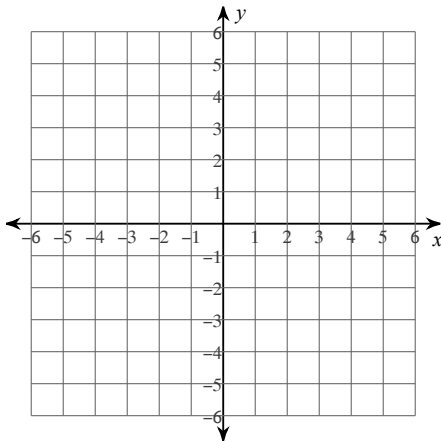
$$58) f(x) = \frac{-2 - \sqrt[3]{4x}}{2}$$



$$59) h(x) = x^3 - 3$$



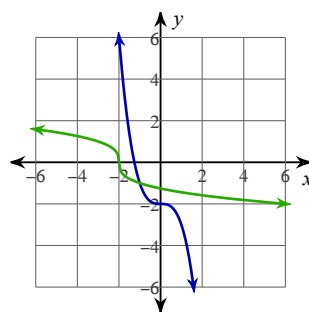
$$60) f(x) = -\frac{4}{x+2} - 2$$



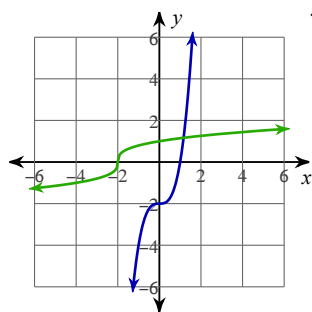
## Answers to WS Inverse Review 1

- |  |   |  |                                   |
|--|---|--|-----------------------------------|
| 1) $g^{-1}(n) = n - 4$                         | 2) $g^{-1}(x) = 5 + \frac{5}{2}x$             | 3) $f^{-1}(x) = -2x$                         | 4) $f^{-1}(x) = -\frac{x}{5}$     |
| 5) $g^{-1}(x) = \frac{-3x + 15}{5}$            | 6) $g^{-1}(n) = \frac{-2n + 10}{5}$           | 7) $f^{-1}(x) = \frac{-5 + x}{5}$            | 8) $g^{-1}(n) = 6n + 2$           |
| 9) $f^{-1}(x) = 2x$                            | 10) $g^{-1}(n) = -\frac{2}{5}n - \frac{6}{5}$ | 11) $f^{-1}(x) = 2x - 4$                     |                                   |
| 12) $f^{-1}(x) = (x - 2)^5 - 2$                | 13) $f^{-1}(x) = -1 + 2x^3$                   | 14) $g^{-1}(x) = \frac{1}{5}x + \frac{4}{5}$ |                                   |
| 15) $g^{-1}(x) = -\frac{4}{3}x + \frac{11}{3}$ | 16) $f^{-1}(x) = -8x + 4$                     | 17) $g^{-1}(x) = \frac{-x - 2}{2}$           | 18) $f^{-1}(n) = -2n - 4$         |
| 19) $g^{-1}(n) = \sqrt[5]{n - 1} + 1$          | 20) $g^{-1}(n) = -\frac{1}{3}n - \frac{4}{3}$ | 21) $g^{-1}(x) = -\frac{2}{x - 3} + 1$       |                                   |
| 22) $f^{-1}(n) = -\frac{3}{n - 2} + 3$         | 23) $h^{-1}(n) = -\frac{2}{n + 2} + 2$        | 24) $f^{-1}(x) = \frac{4}{-x + 1} + 1$       |                                   |
| 25) $f^{-1}(x) = \frac{2}{x}$                  | 26) $f^{-1}(n) = \frac{1}{n} + 1$             | 27) $f^{-1}(x) = \frac{3}{x - 3} - 1$        | 28) $g^{-1}(n) = \frac{4}{n} + 1$ |
| 29) $f^{-1}(n) = \frac{3}{n - 1} - 1$          | 30) $g^{-1}(n) = \frac{1}{-n - 2}$            | 31) Yes                                      | 32) No                            |
| 33) No   | 34) Yes                                       | 35) No                                       | 36) No                            |
| 37) No   | 38) No  | 39) Yes                                      | 40) Yes                           |
| 41) No   | 42) No  | 43) Yes                                      | 44) No                            |
| 45) No   | 46) No  | 47) Yes                                      | 48) No                            |
| 49) No   | 50) No  | 51)  |                                   |

$$h^{-1}(x) = \sqrt[3]{-x - 2}$$

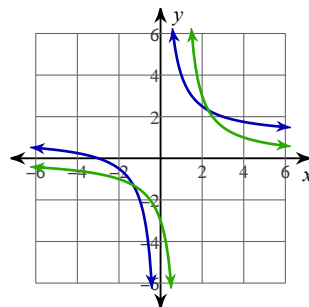


52)



$$f^{-1}(x) = \sqrt[3]{\frac{x + 2}{2}}$$

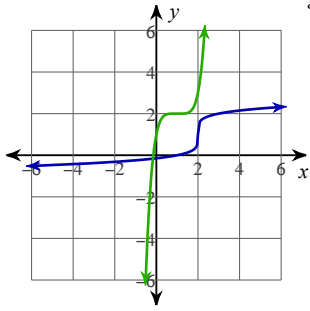
53)



$$f^{-1}(x) = \frac{3}{x - 1}$$

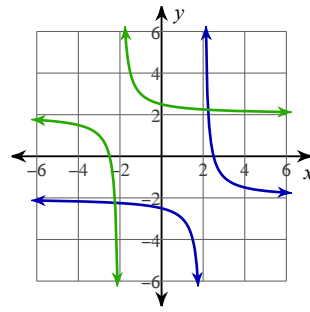
54)

$$g^{-1}(x) = (x-1)^5 + 2$$



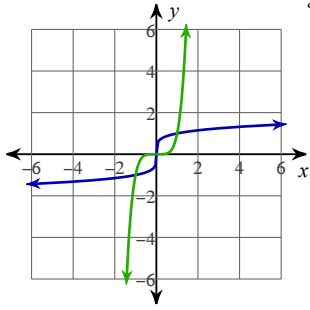
55)

$$g^{-1}(x) = \frac{1}{x+2} + 2$$



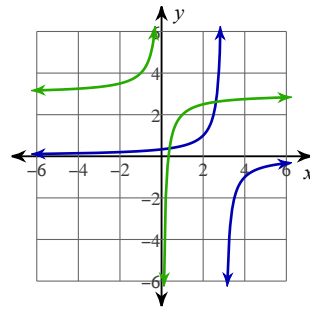
56)

$$g^{-1}(x) = x^5$$



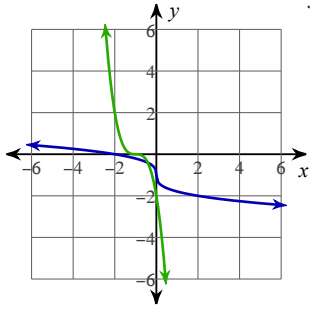
57)

$$f^{-1}(x) = -\frac{1}{x} + 3$$



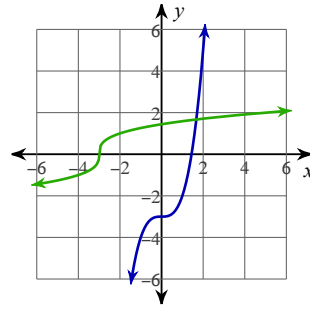
58)

$$f^{-1}(x) = -2(x+1)^3$$



59)

$$h^{-1}(x) = \sqrt[3]{x+3}$$



60)

$$f^{-1}(x) = -\frac{4}{x+2} - 2$$

