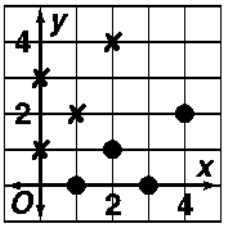
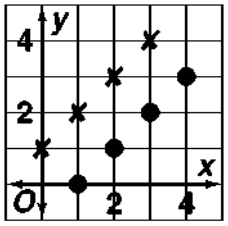
1.

x	0	1	0	2
y	1	2	3	4



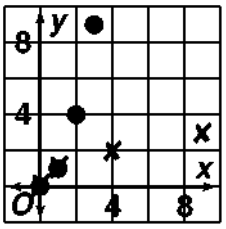
2.

x	0	1	2	3
y	1	2	3	4



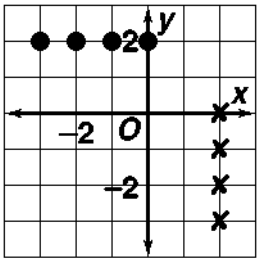
3.

x	0	1	4	9
y	0	1	2	3



4.

x	2	2	2	2
y	−3	−2	−1	0



5. $y = \frac{1}{3}x - \frac{1}{3}$; yes

6. $y = \frac{1}{2}x + \frac{1}{2}$; yes

7. $y = -\frac{1}{3}x + \frac{4}{3}$; yes

8. $y = \pm\sqrt{\frac{5 - x}{2}}$; no

9. $y = \pm\sqrt{x - 4}$; no

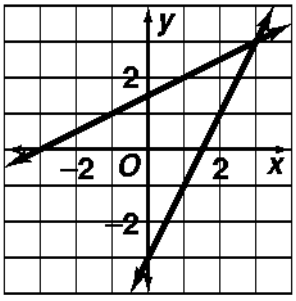
10. $y = \pm\sqrt{\frac{x + 5}{3}}$; no

11. $y = \pm\sqrt{x} - 1$; no

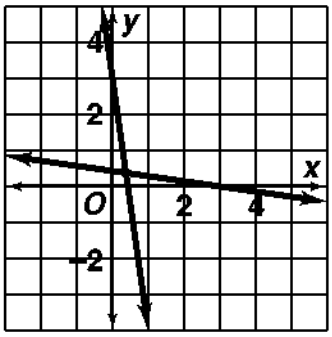
12. $y = \pm\frac{\sqrt{x} + 4}{3}$; no

13. $y = \pm\frac{\sqrt{x - 5} - 1}{2}$; no

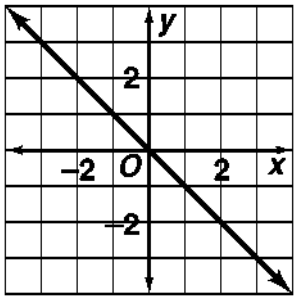
14.



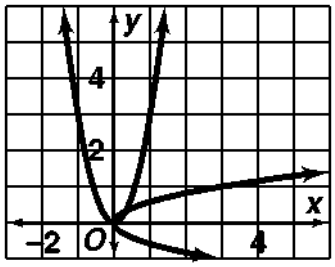
15.



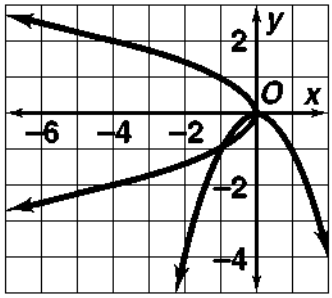
16.



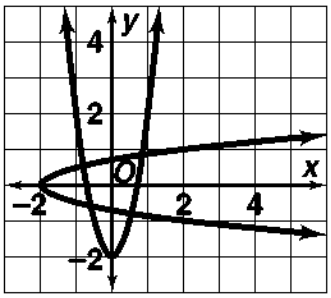
17.



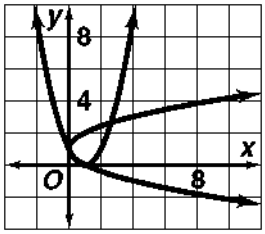
18.



19.



20.



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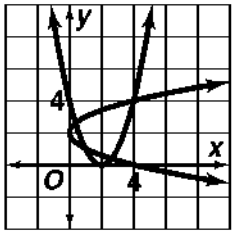
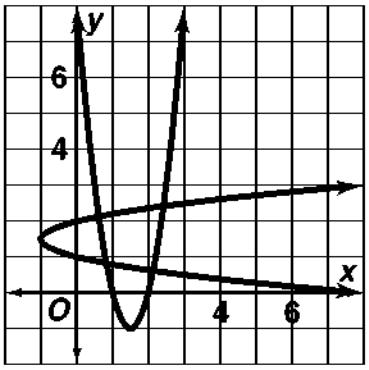


22.



23. $f^{-1}(x) = \frac{x - 4}{3}$, and the domain and range for both f and f^{-1} are all real numbers; f^{-1} is a function.

24. $f^{-1}(x) = x^2 + 5$ $x \geq 0$, domain f: $\{x \mid x \geq 5\}$, range f: $\{y \mid y \geq 0\}$, domain f^{-1}: $\{x \mid x \geq 0\}$, and range f^{-1}: $\{y \mid y \geq 5\}$; f^{-1} is a function.

25. $f^{-1}(x) = x^2 - 7$ $x \geq 0$, domain f: $\{x \mid x \geq -7\}$, range f: $\{y \mid y \geq 0\}$, domain f^{-1}: $\{x \mid x \geq 0\}$, and range f^{-1}: $\{y \mid y \geq -7\}$; f^{-1} is a function.

26. $f^{-1}(x) = \frac{3 - x^2}{2}$ $x \geq 0$, domain f: $\{x \mid x \leq \frac{3}{2}\}$, range f: $\{y \mid y \geq 0\}$, domain f^{-1}: $\{x \mid x \geq 0\}$, and range f^{-1}: $\{y \mid y \leq \frac{3}{2}\}$; f^{-1} is a function.

27. $f^{-1}(x) = \pm\sqrt{\frac{x - 2}{2}}$ $x \geq 2$, domain f: all reals, range f: $\{y \mid y \geq 2\}$, domain f^{-1}: $\{x \mid x \geq 2\}$, and range f^{-1}: all reals; f^{-1} is not a function.

28. $f^{-1}(x) = 4\sqrt{1 - x}$ $x \leq 1$, domain f: all reals, range f: $\{y \mid y \leq 1\}$, domain f^{-1}: $\{x \mid x \leq 1\}$, and range f^{-1}: all reals; f^{-1} is not a function.

29. a. $F = \frac{5}{9}(C - 32)$; yes

b. -3.89°F

30. a. $r = \sqrt[3]{\frac{3V}{4\pi}}$; yes

b. 20.29 ft

31. 10 **32.** -10 **33.** 0.2 **34.** d

35. $f^{-1}(x) = \pm\sqrt{\frac{2x + 8}{3}}$ no **36.** $f^{-1}(x) = \pm 2\sqrt{\frac{x}{3}}$; no

37. $f^{-1}(x) = \frac{x^2 - 6x + 10}{2}, x \geq 3$; yes

38. $f^{-1}(x) = \pm\sqrt{x} - 1$; no **39.** $f^{-1}(x) = \frac{1 \pm \sqrt{x}}{2}$; no

40. $f^{-1}(x) = -1 \pm \sqrt{x + 1}$; no

41. $f^{-1}(x) = \sqrt[3]{x}$; yes **42.** $f^{-1}(x) = \pm\sqrt[4]{x}$; no

43. $f^{-1}(x) = \pm\sqrt{\frac{5x - 5}{2}}$; no **44.** $x = \frac{v^2}{64}$; 25 ft, 6.25 ft

45. The range of the inverse is the domain of f, which is $x \geq 1$.

46. 2 and 5

47. $f^{-1}(x) = x^2$ $x \leq 0$, domain of f: $\{x \mid x \geq 0\}$, range of f:$\{ 1\ y \mid y \geq 0\}$, domain of f^{-1}: $\{x \mid x \geq 0\}$, range of f^{-1}: $\{ y \mid y \geq \geq 0\}$, and f^{-1} is a function.

48. $f^{-1}(x) = (x - 3)^2$ $x \geq 3$, domain of f: $\{x \mid x \geq 0\}$, range of f: $\{y \mid y \geq 3\}$, domain of f^{-1}: $\{x \mid x \geq 3\}$, range of f^{-1}:$\{ y \mid y \geq 0\}$, and f^{-1} is a function.

49. $f^{-1}(x) = 3 - x^2$ $x \geq \geq 0$, domain of f: $\{x \mid x \leq 3\}$, range of f: $\{y \mid y \geq 0\}$, domain of f^{-1}:$\{x \mid x \geq 0\}$, range of f^{-1}:$\{ y \mid y \leq 3\}$, and f^{-1} is a function.

50. $f^{-1}(x) = x^2 - 2$ $x \geq 0$, domain of f: $\{x \mid x \geq -2\}$, range of f:$\{y \mid y \geq 0\}$, domain of f^{-1}: $\{x \mid x \geq 0\}$, range of f^{-1}: $\{ y \mid y \geq -2\}$, and f^{-1} is a function.

51. $f^{-1}(x) = 4\sqrt{2x}$ $x \geq 0$, domain of f: all reals, range of f: $\{y \mid y \geq 0\}$, domain of f^{-1}: $\{x \mid x \geq 0\}$, range of f^{-1}: all reals, and f^{-1} is not a function.

52. $f^{-1}(x) = \pm\frac{1}{\sqrt{x}}$ $x > 0$, domain of f:$\{x \mid x \neq 0\}$, range of f:$\{y \mid y > 0\}$, domain of f^{-1}: $\{x \mid x > 0\}$, range of f^{-1}: $\{y \mid y \neq 0\}$, and f^{-1} is not a function.

53. $f^{-1}(x) = \pm\sqrt{x} + 4$ $x \geq 0$, domain of f: all reals, range of f: $\{y \mid y \geq 0\}$, domain of f^{-1}: $\{x \mid x \geq 0\}$, range of f^{-1}: all reals, and f^{-1} is not a function.

54. $f^{-1}(x) = 7 \pm \sqrt{x}$ $x \geq 0$, domain of f: all reals, range of f: $\{y \mid y \geq 0\}$, domain of f^{-1}: $\{x \mid x \geq 0\}$, range of f^{-1}: all reals, and f^{-1} is not a function.

55. $f^{-1}(x) = \pm\sqrt{\frac{1}{x}} - 1$ $x > 0$, domain of f: $\{x \mid x \neq -1\}$, range of f:$\{y \mid y > 0\}$, domain of f^{-1}: $\{x \mid x > 0\}$, range of f^{-1}: $\{y \mid y \neq -1\}$, and f^{-1} is not a function.

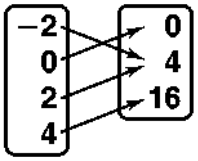
56. $f^{-1}(x) = \left(-\frac{x-4}{2}\right)^2$ $x < 4$, domain of f: $\{x \mid x \geq 0\}$, range of f: $\{y \mid y \leq 4\}$, domain of f^{-1}: $\{x \leq 4\}$, range of f^{-1}: $\{y \mid y \geq 0\}$, and f^{-1} is a function.

57. $f^{-1}(x) = \left(\frac{3}{x}\right)^2$ $x \geq 0$, domain of f: $\{x \mid x > 0\}$, range of f: $\{y \mid y > 0\}$, domain of f^{-1}: $\{x \mid x > 0\}$, range of f^{-1}: $\{y \mid y > 0\}$, and f^{-1} is a function.

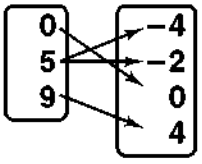
58. $f^{-1}(x) = -\frac{1}{2}\left(\frac{1}{x}\right)^2$ $x > 0$, domain of f: $\{x \mid x < 0\}$, range of f: $\{.y \mid y > 0\}$, domain of f^{-1}: $\{x \mid x > 0\}$, range of f^{-1}: $\{y \mid y < 0\}$, and f^{-1} is a function.

59. a-b. Answers may vary. Sample:

a.



b.



60. r is not a function because there are two y-values for one x-value. r is a function because each of its x-values has one y-value.

61. $h = s\sqrt{2}$; $3\sqrt{2}$ in. $\approx$ 4.2 in.

62. Check students' work.

63. $f^{-1}(x) = \sqrt[3]{5x}$; yes

64. $f^{-1}(x) = x^3 + 5$; yes

65. $f^{-1}(x) = 27x^3$; yes

66. $f^{-1}(x) = 2 + \sqrt[3]{x}$; yes

67. $f^{-1}(x) = x^4$, $x \geq 0$; yes

68. $f^{-1}(x) = \pm\sqrt[4]{\frac{5x}{6}}$ no