1. Kendra owns a restaurant. She charges $3.00 for 2 eggs and one piece of toast, and $1.80 for one egg and one piece of toast. How much does Kendra charge for an egg? A piece of toast?

$3 = 2e + 1t

$-\$1.80 = -1e - 1t$

$1.20 = 1e$

$e = \$1.20$

$\$3 = 2e + 1t$

$3 = 2(1.20) + t$

$3 = 2.40 + t$

$-2.40 \quad -2.40$

$\$.60 = t$

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2. $y = -3x + 2$

$y = -3x + 4$

mult -1

$-y = 3x - 2$

$0 = 2$

No Solution

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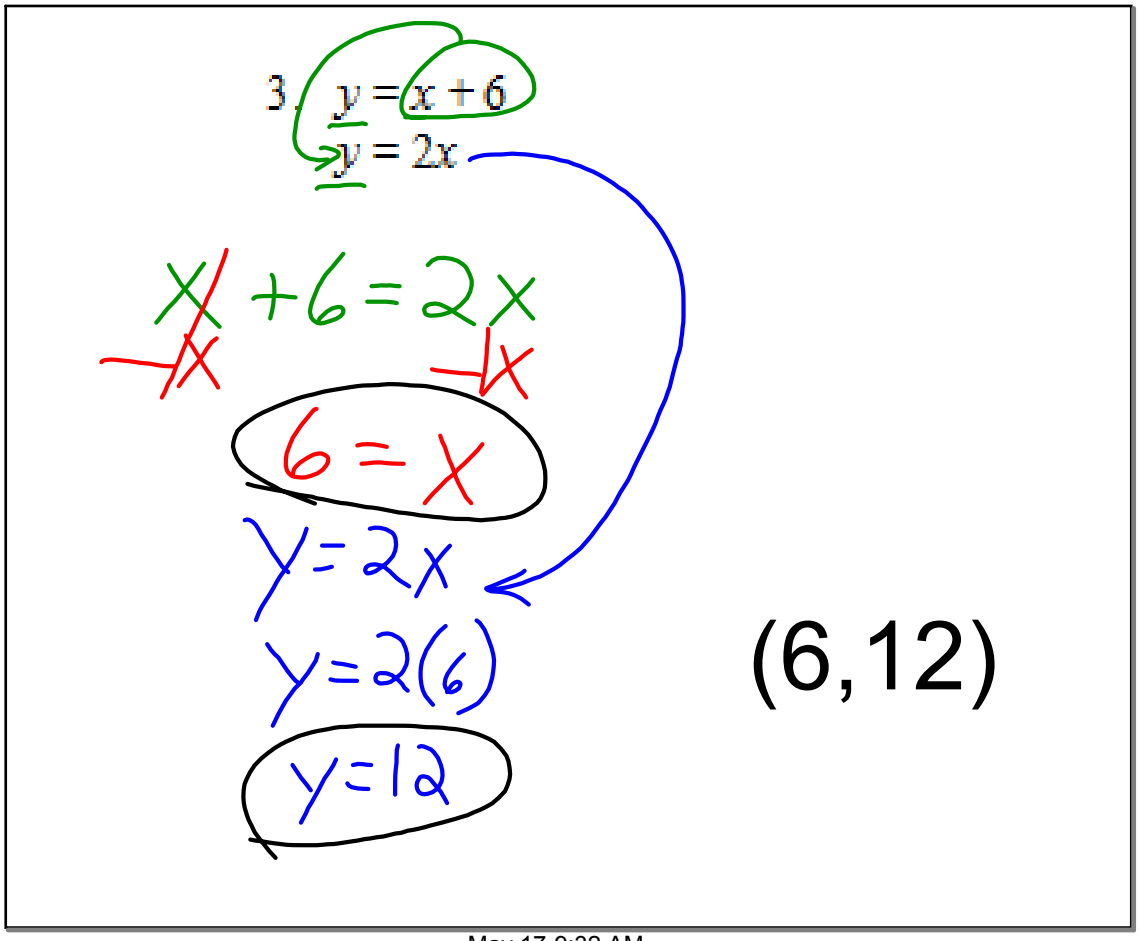

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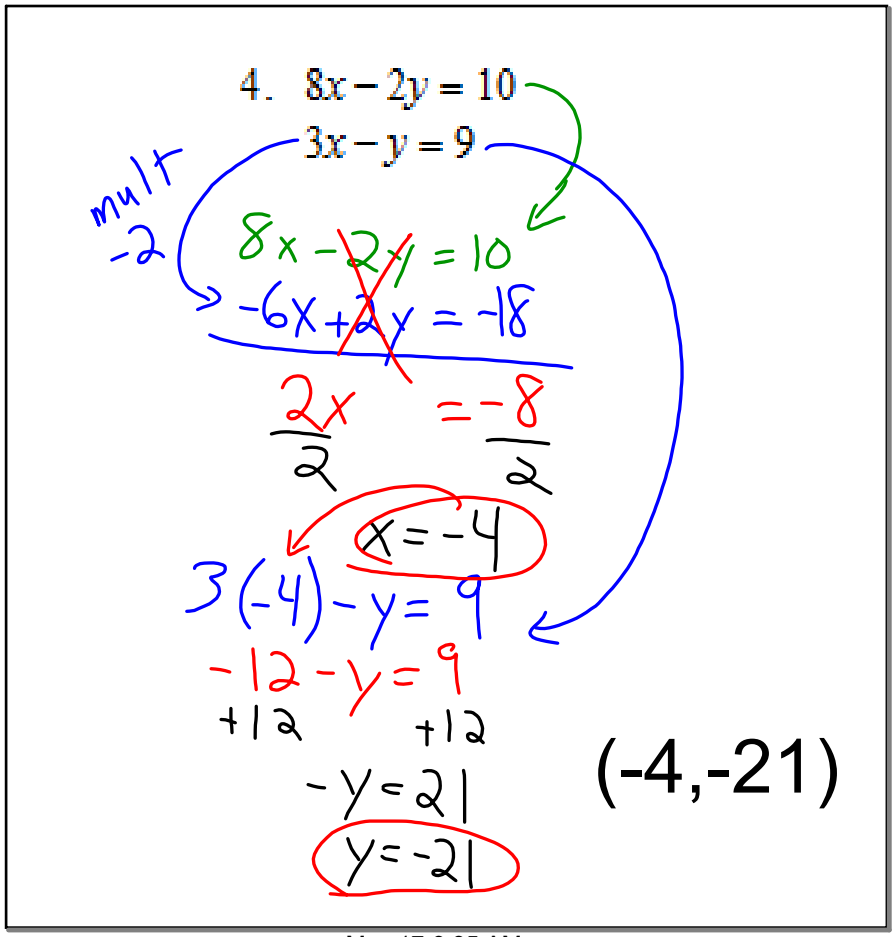

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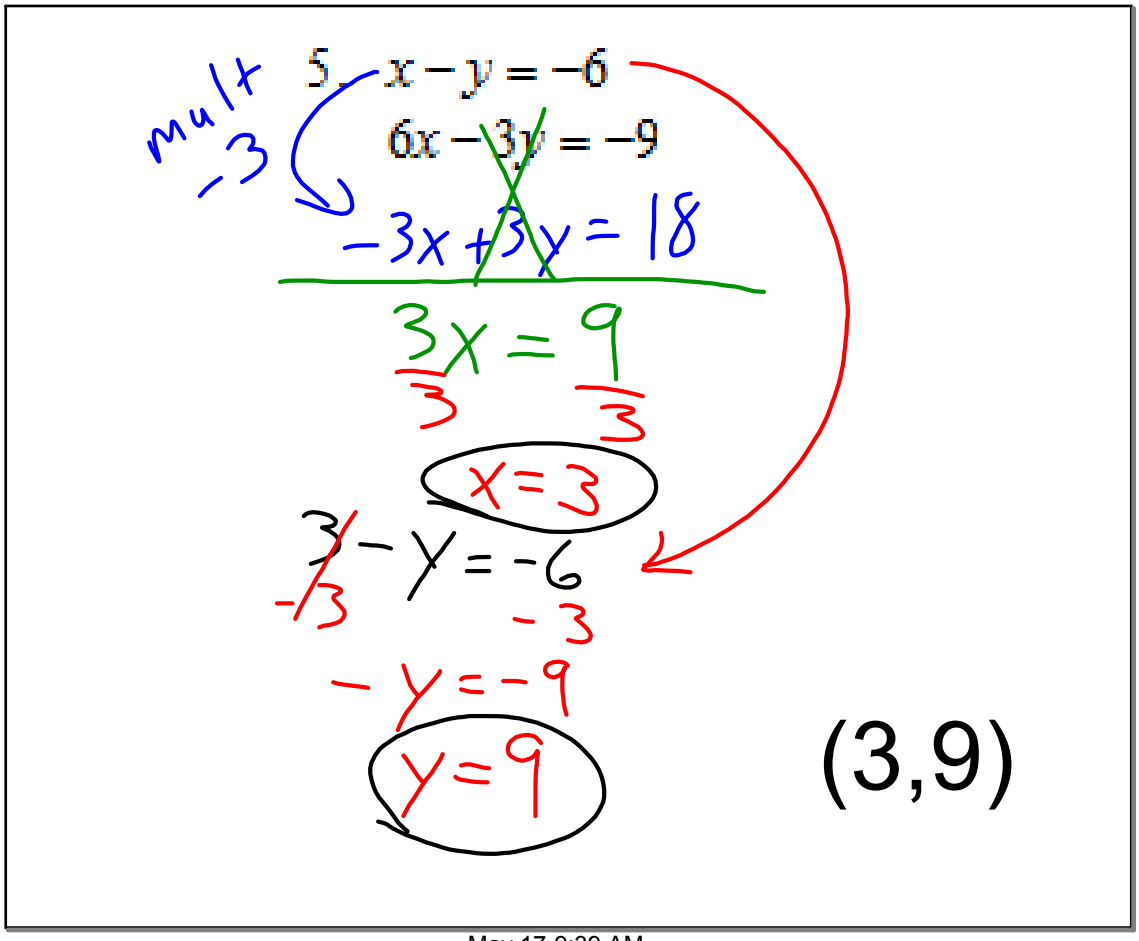

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6. (2, −30)
7. (−9, −9)
8. (−9, 2)
9. (−1, 4)

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Graph

10. $y < 3x - 5$

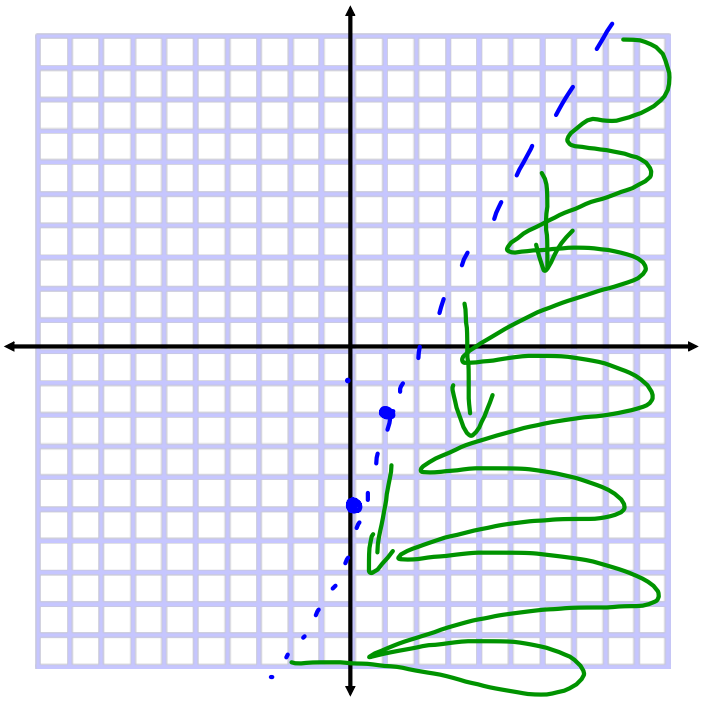
$y = 3x - 5$

$y = 3(1) - 5$

$3 - 5$

$y = -2$

$(1, -2)$



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11. $4x + 6y \geq 10$

$4x + 6y = 10$

$4(1) + 6(1) = 10$

$4 + 6 = 10$ ✓

$4(0) + 6y = 10$

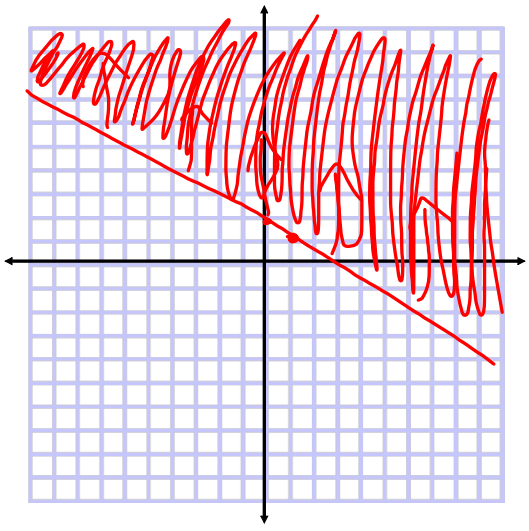
$\frac{6y}{6} = \frac{10}{6}$

$x = 0$ $y = \frac{5}{3}$

$4(0) + 6(0) \geq 10$

$0 \neq 10$

Away from $(0,0)$



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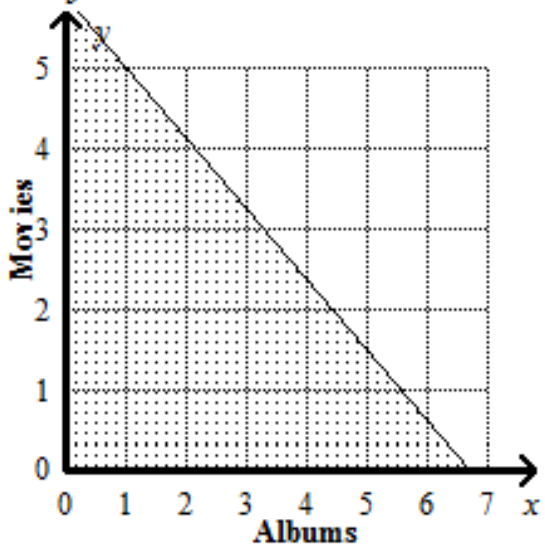
12. $7x + 8y \leq 47$



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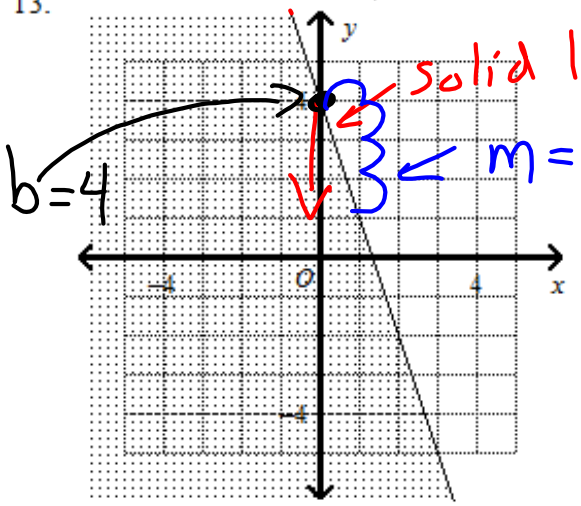
What ineq. represents the graph?

13.



solid line

$m = -3$

$b = 4$

less than or equal to

$y = mx + b$

$y \leq -3x + 4$

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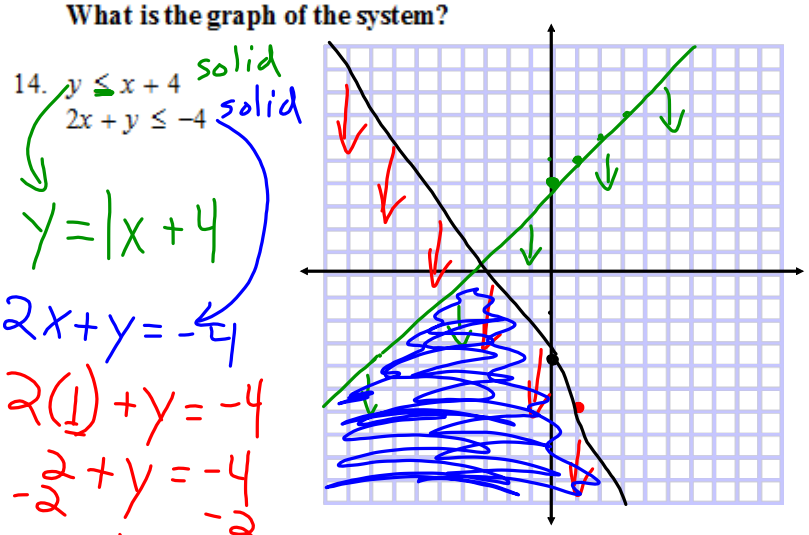
What is the graph of the system?

14. $y \leq x + 4$ solid
$2x + y \leq -4$ solid



$y = |x + 4$

$2x + y = -4$

$2(1) + y = -4$

$-2 + y = -4$

$-2 \quad -2$

$y = -6$

$(1, -6)$

~~$2(0)$~~ $+ y = -4$

$y = -4$

$(0, -4)$

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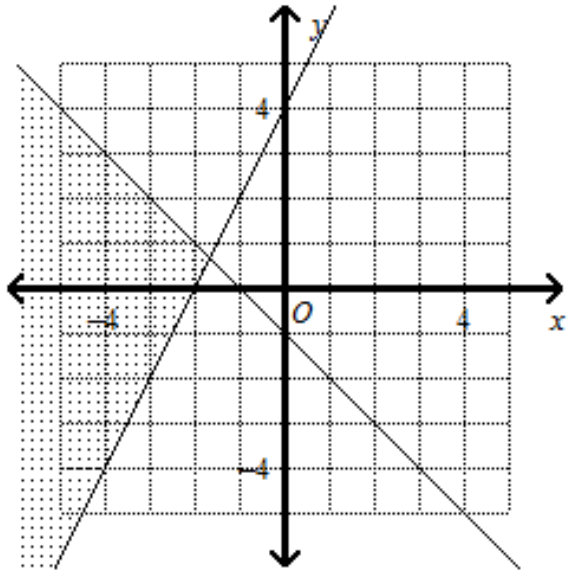
15.



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16. What is the value of $\frac{1}{2^{-2}x^{-3}y^{5}}$ for $x = 2$ and $y = -4$?

$$\frac{2^2 x^3}{y^5} = \frac{2^2 \cdot 2^3}{(-4)^5}$$

$$\frac{4 \cdot 8}{-1024} = \frac{32}{-1024} \div 32$$

$$\frac{1}{-32} = -\frac{1}{32}$$

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17. $\frac{1}{a^{-5}}$

a^5

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18. What is the value of $\frac{y^{-5}}{x^{-3}}$ for $x = 2$ and $y = -4$?

$\frac{x^3}{y^5}$

$\frac{2^3}{(-4)^5} = \frac{8}{-1024} \div 8 = \frac{1}{-128}$

$-\frac{1}{128}$

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19. $2b^{-1} \cdot 5b^{10}$

$10b^9$

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20. $7x^{-8} \cdot 6x^{3}$

$42x^{-5}$

$\frac{42}{x^{5}}$

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Find the simplified form of the expression. Give your answer in scientific notation.

21. $(7 \times 10^{2})(7 \times 10^{5})$

49×10^{7}

4.9×10^{8}

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22. $m^{7}\left(m^{\frac{1}{2}}\right)^{-9}$

$m^{7} \cdot m^{-18}$

m^{-11}

$\frac{1}{m^{11}}$

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23. $(p^{6})^{2}$

p^{12}

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24. $(t^{\frac{5}{3}})^{\frac{1}{5}} = \frac{5}{15} = \frac{1}{3}$

$t^{1/3}$ or $\sqrt[3]{t^1} = \sqrt[3]{t}$

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25. $(10n^2)^{-5}$

$10^{-5} n^{-10}$

$\frac{1}{10^5 n^{10}}$

$\frac{1}{100{,}000\, n^{10}}$

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26. $(-5g^4h^6)^2(g^5h^5)^5$

$(25g^8h^{12})(g^{25}h^{25})$

$25g^{33}h^{37}$

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27. $\left(\frac{3x^5}{8j^4}\right)^{-3}$

$\frac{3^{-3}x^{-15}}{8^{-3}j^{-12}}$

$\frac{8^3j^{12}}{3^3x^{15}}$

$\frac{512j^{12}}{27x^{15}}$

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28. $\left(\frac{m^{-1}m^{5}}{m^{-2}}\right)^{-3}$

$\frac{m^{3}m^{-15}}{m^{6}}$

$\frac{m^{3}}{m^{6}m^{15}}$

$\frac{m^{3}}{m^{21}}$

m^{-18}

$\frac{1}{m^{18}}$ or $\frac{m^{3}}{m^{21}}$ $\frac{1}{m^{18}}$

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29. $\frac{c^{9}d^{-7}}{c^{14}d^{-10}}$

$\frac{c^{9}d^{10}}{c^{14}d^{7}}$

$c^{-5}d^{3}$

$\frac{d^{3}}{c^{5}}$

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30. Write the exponential expression $3(x)^{\frac{3}{8}}$ in radical form.

$\sqrt[8]{x^3}$

Ex:

$3xy^{\frac{3}{8}}$

$3xy\sqrt[8]{z^3}$

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31. Suppose an investment of \$3,800 doubles in value every decade. The function $f(x) = 3,800 \cdot 2^x$ gives the value of the investment after x decades. How much is the investment worth after 2 decades?

$f(2) = 3,800 \cdot 2^2$

\$15,200

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32. Suppose a population of 40 crickets doubles in size every month. The function $f(x) = 40 \cdot 2^x$ gives the population after x months. How many crickets will there be after 3 years?

3 yr = 36 m

$f(36) = 40 \cdot 2^{36}$

2.75×10^{12}

2750000000000.

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33. Suppose that the population of deer in a state is 1,500 and is growing 2% each year. Predict the population after 4 years.

$f(x) = a \cdot b^x$

$f(x) = 1500 \cdot 1.02^x$

$f(4) = 1500 \cdot 1.02^4$

1624 deer

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34. $1,400 principal earning 7%, compounded monthly, after 22 years

$$A = P\left(1 + \frac{r}{n}\right)^{nt}$$

$$1400\left(1 + \frac{.07}{12}\right)^{12 \cdot 22}$$

$$12 \cdot 22 = 264$$

$$\$6501.27$$

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35. A boat costs $8,350 and decreases in value by 12% per year. How much will the boat be worth after 5 years?

$$f(x) = a \cdot b^x \qquad 1 - .12 = .88$$

$$f(x) = 8350 \cdot (.88)^x$$

$$f(5) = 8350 \cdot .88^5$$

$$\$\ 4406.56$$

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36. Suppose the population of a town is 8,600 and is growing 3% each year. Predict the population after 3 years.

$f(x) = a \cdot b^x$

$f(3) = 8600 \cdot 1.03^3$

9397 people

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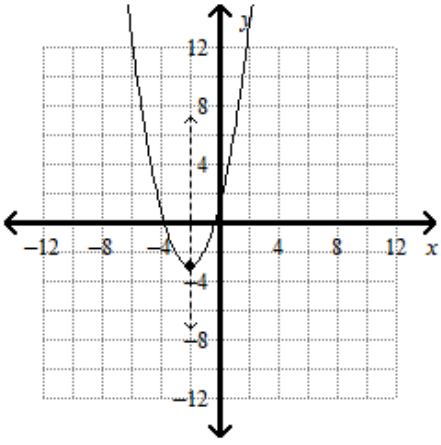
37. Triangle 4
38. $f(n) = -2 \cdot (-3)^{n-1}$
39. 0
40. $-2y^5$
41. $2x^2 + 3x - 6$; quadratic trinomial
42. $5w^3(5w^3 + 7)$
43. $2x^2$
44. $9x^2 - 36x + 35$
45. $49m^2 + 70m + 25$
46. $4x^2 - 24x + 36$
47. $4n^2 - 4$
48. $49m^4 - 25$
49. $(d - 10)(d - 9)$
50. $(x + 4)(x - 10)$
51. $(2x + 3)(4x + 3)$
52. $(3x + 1)(2x + 1)$
53. $(5x + 3)(2x + 5)$
54. $(3g - 2)(2g + 3)$
55. $(2x + 9y)(2x - 9y)$
56. $(d - 10)^2$
57. $(d + 9)^2$
58. $(x + 1)(3x^2 + 1)$
59. $y, y - 2$, and $y + 7$
60. 1.5 s; 42 ft
61. (–2, –3); minimum
62.



axis of symmetry: $x = -2$
vertex: (–2, –3)

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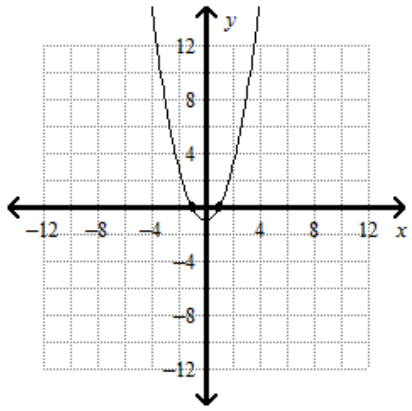
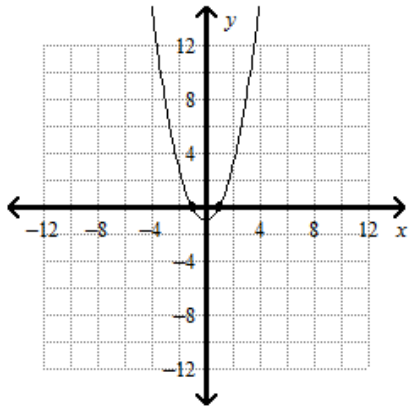
63.



There are two solutions: –1 and 1.

64.



65. –3, 2

66. $-\frac{5}{2}, \frac{9}{7}$

67. $\frac{4}{5}, -\frac{1}{4}$

68. (4,–1)

69. –5, –2

70. –3.56, 0.56

71. $\frac{6}{5}$

72. $2h^2\sqrt{3}$

73. $4q\sqrt{14}$

74. $9\sqrt{6}$

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75. $\frac{3\left(\sqrt{7}+\sqrt{2}\right)}{5}$

76. 14

77. 100

78. $-x-6$; where $x \neq 6$

79. 3; where $x \neq 2$

80. $-x+5$; where $x \neq -2$

81. $\frac{5(y+4)}{2}$

82. $\frac{3(k+3)(2k+1)}{2}$

83. $(k+3)(3k+2)$

84. $\frac{(x+2)(x-3)}{x-8}$

85. $5x-5+\frac{3}{5x-3}$

86. $x-4+\frac{4}{x-2}$

87. $\frac{-10x+4}{x-8}$

88. $\frac{5x-25}{(x+3)(x-2)}$

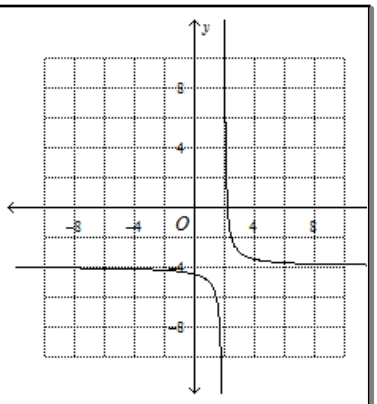
89. $\frac{3x^2-2x+26}{(x+2)(x-4)}$

90. $\frac{4x-1}{(2x+1)(5x+1)}$

91. $\frac{1}{x-5}$

92. $\frac{3x-4}{x+5}$

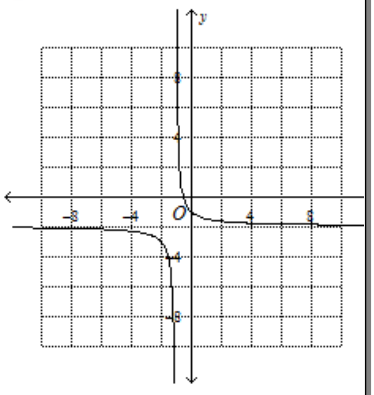
93.



$x = 2, y = -4$

94. –5

95.



$x = -1$

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