Summer Math Skills - Mason High School

Simplify each expression.

1) $-10n - 4n$

2) $-6n - 7n$

3) $-10b + 2b$

4) $-9 - p - 5$

5) $10x - 9x$

6) $n - 3n$

7) $5n - 5(8 + 5n)$

8) $8(1 - 6n) - 5n$

9) $-3m - 4(4m - 4)$

10) $-3m + 7(6m + 4)$

11) $5(5 + 5m) + 3$

12) $2n + 4(-2n - 4)$

Solve each equation.

13) $m + 6 = -21$

14) $\frac{k}{13} = -13$

15) $-276 = 23x$

16) $-4 = x + (-9)$

17) $-23x = 391$

18) $\frac{m}{10} = -3$

19) $6(5b - 1) - 1 = -7$

20) $2(-x - 8) = -18$

21) $12 = 2(5 + x)$

22) $-12 = 6(6x - 8)$

23) $-6(x - 5) = -18$

24) $-16 = -8(n + 5)$

Solve each equation by factoring.

25) $x^2 - 3x - 10 = 0$

26) $n^2 - n - 12 = 0$

27) $b^2 - 3b - 40 = 0$

28) $r^2 + 3r = 0$

29) $k^2 + 11k + 28 = 0$

30) $n^2 + 5n - 24 = 0$

Solve each equation by taking square roots.

31) $4x^2 = 36$

32) $n^2 + 1 = 65$

33) $49r^2 = 16$

34) $k^2 - 3 = 6$

35) $64n^2 = 49$

36) $64n^2 = 9$

Solve each equation. Remember to check for extraneous solutions.

37) $4 = \sqrt{b - 2}$

38) $5 = \sqrt{m}$

39) $1 = \sqrt{x}$

40) $\sqrt{x} = 2$

41) $\sqrt{9k} = 3$

42) $\sqrt{b + 4} = 4$

Solve each equation.

43) $-66 = -10 + 7n$

44) $\dfrac{6 + x}{3} = 6$

45) $90 = -6(v + 2)$

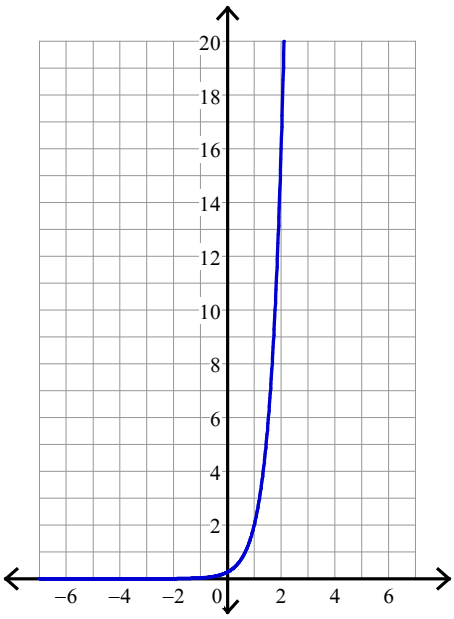
46) $11 = \dfrac{b}{2} + 8$

47) $\dfrac{v}{7} - 3 = -5$

48) $\dfrac{-1 + n}{3} = -3$

Write an equation for each graph.

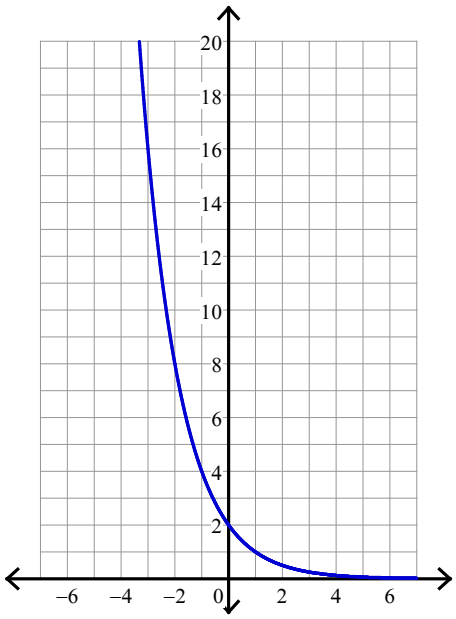
49)



A) $y = \frac{1}{3} \cdot 7^x$ B) $y = 4 \cdot 2^x$

C) $y = 2 \cdot \left(\frac{1}{2}\right)^x$ D) $y = \frac{1}{4} \cdot 8^x$

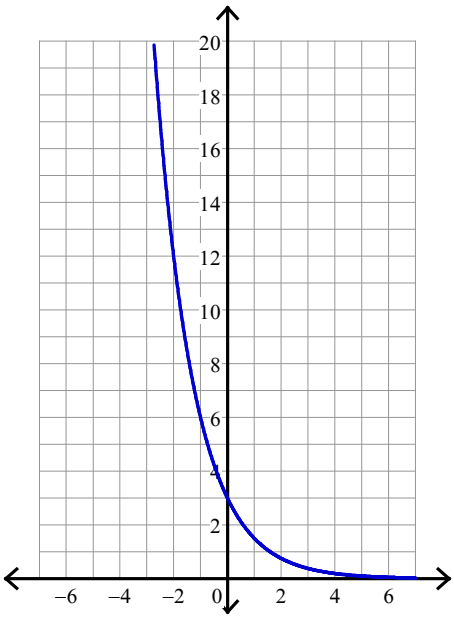
50)



A) $y = 3 \cdot \left(\frac{1}{2}\right)^x$ B) $y = 2 \cdot \left(\frac{1}{2}\right)^x$

C) $y = 2 \cdot 3^x$ D) $y = 3 \cdot 2^x$

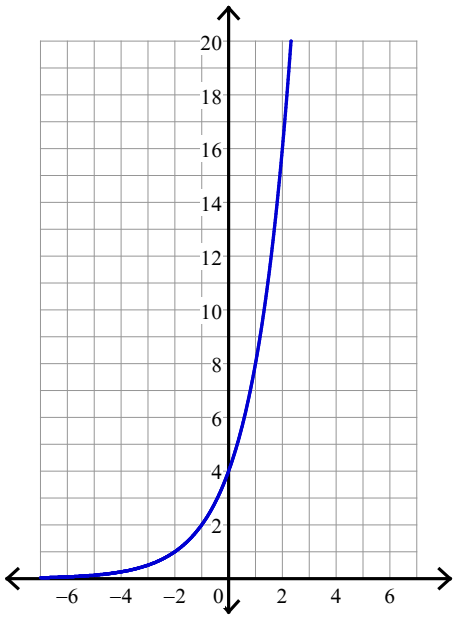
51)



A) $y = 2 \cdot \left(\frac{1}{2}\right)^x$ B) $y = 3 \cdot \left(\frac{1}{2}\right)^x$

C) $y = \frac{1}{3} \cdot 6^x$ D) $y = \frac{1}{2} \cdot 3^x$

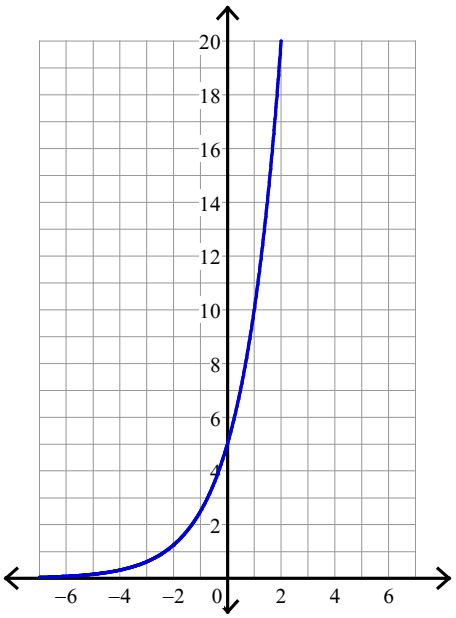
52)



A) $y = 4 \cdot 2^x$ B) $y = 2 \cdot 3^x$

C) $y = 4 \cdot \left(\frac{1}{2}\right)^x$ D) $y = 3 \cdot 2^x$

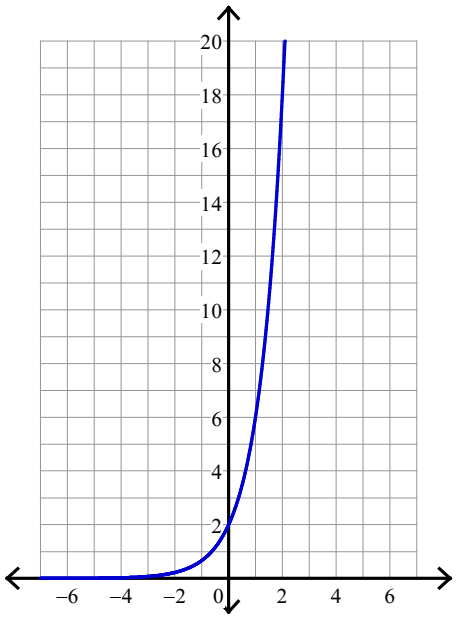
53)



A) $y = 2 \cdot 5^x$ B) $y = 4 \cdot \left(\frac{1}{2}\right)^x$

C) $y = 5 \cdot 2^x$ D) $y = \frac{1}{2} \cdot 2^x$

54)



A) $y = 2 \cdot 4^x$ B) $y = 4 \cdot 2^x$

C) $y = 2 \cdot 3^x$ D) $y = 3 \cdot 2^x$

Simplify. Your answer should contain only positive exponents.

55) $n^2 n^3$

56) $n \cdot 3n^3$

57) $3x \cdot 2x$

58) $2x^2 \cdot x^3$

59) $2x^2 \cdot 3x^3$

60) $x^2 x^0$

61) $\left(m^3 n^3 \cdot n^5\right)^4$

62) $\left(u^5 v^5\right)^3 \left(u^5\right)^5$

63) $\left(yx^4 \cdot x^3\right)^4$

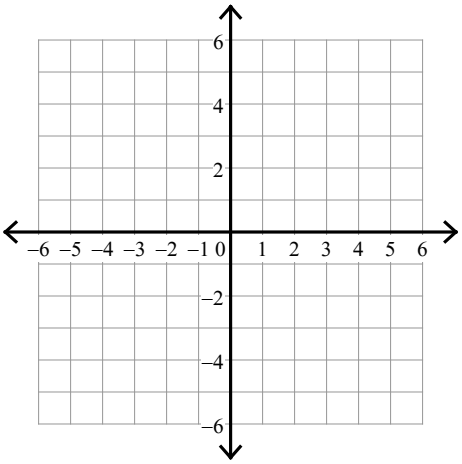
64) $\left(a^2 b^5\right)^2 \left(a^2 b^3\right)^2$

65) $\left(x^4 y^4\right)^4 \cdot xy^3$

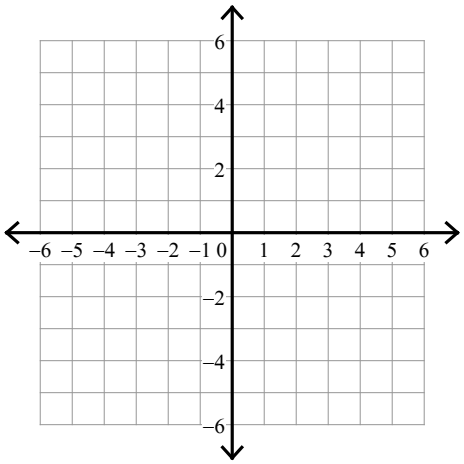
66) $\left(u^2 v^5\right)^5 \cdot u^3 v^3$

Sketch the graph of each line.

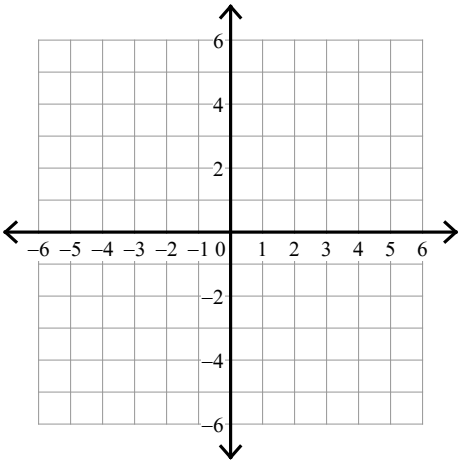
67) $y = -x - 1$



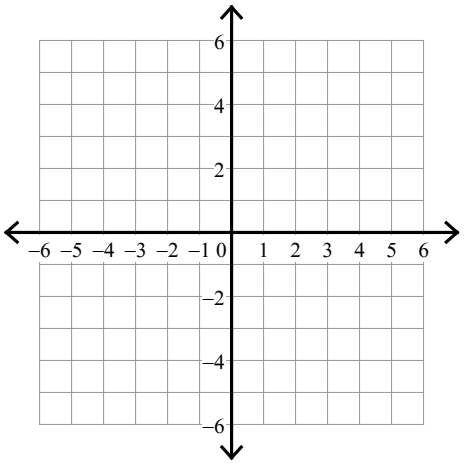
68) $y = \frac{5}{2}x - 1$



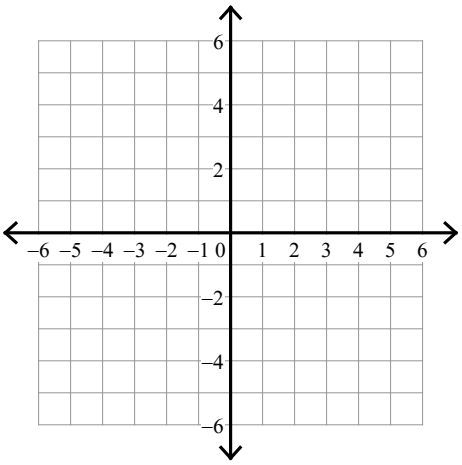
69) $y = -2x - 1$



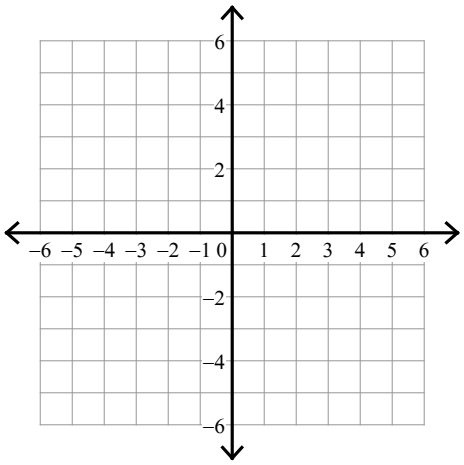
70) $y = -\frac{3}{4}x + 3$



71) $y = -2x - 5$

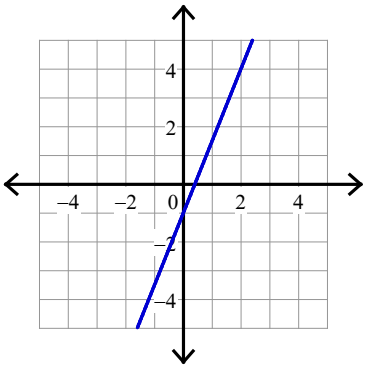


72) $y = 3x + 5$



Write the slope-intercept form of the equation of each line.

73)



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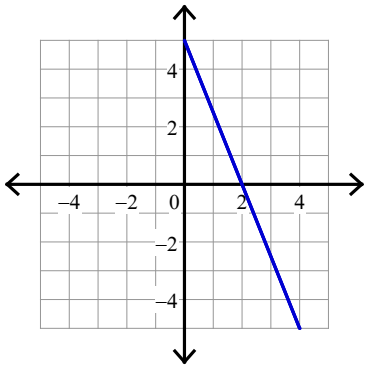

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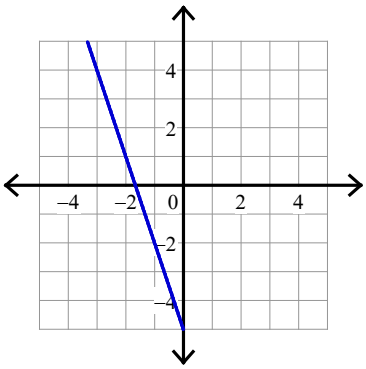

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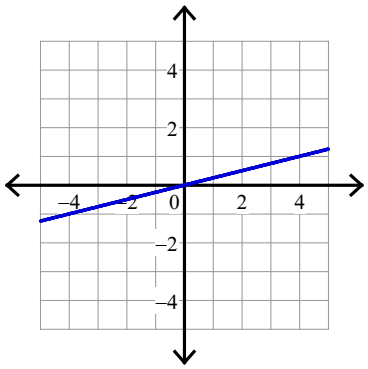

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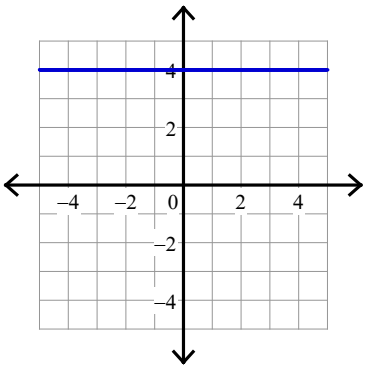
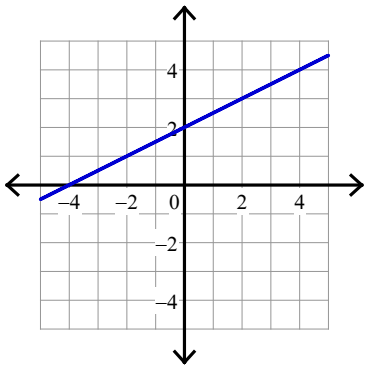


78)



Find each product.

79) $(4p + 5)(3p - 5)$

80) $(2n + 4)(2n + 3)$

81) $(2x + 2)(3x - 5)$

82) $(2r + 1)(2r - 5)$

83) $(4x + 3)(2x - 4)$

84) $(2k - 3)(5k - 3)$

Simplify each expression.

85) $(3k^3 - 5k^4 + 6k^2) + (6k^3 - 2k^2 + 6k^4)$

86) $(4n^3 + 3n^2 - 5n^4) - (2n^4 + n^2 - 3n^3)$

87) $(r^3 - 6r + 7r^4) - (r^3 + 6r^4 + 7r)$

88) $(1 + 8v^4 - 8v^3) - (3 + 6v^3 - 5v^4)$

89) $(6r^3 + 4r - 5r^2) + (7r - 4r^4 - r^3)$

90) $(7n^3 - 5n^2 + 4) + (8 + 4n^3 - 6n^2)$

Simplify.

91) $\sqrt{20x^2}$

92) $\sqrt{180r}$

93) $\sqrt{175x^2}$

94) $\sqrt{128p^3}$

95) $\sqrt{175n^3}$

96) $\sqrt{8k^4}$

Solve each system by substitution.

97) $y = 2x - 8$
$y = -3x + 12$

98) $y = -4x + 3$
$y = -2x + 1$

99) $y = 3x + 2$
$y = 4x + 2$

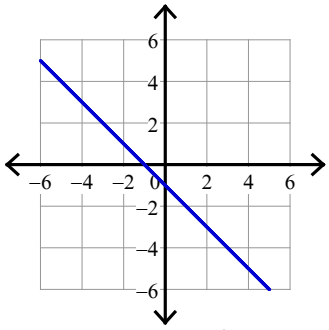
100) $y = 4x + 8$
$y = -2x - 4$

101) $y = -2x - 6$
$y = x$

102) $y = 3x + 9$
$y = -3$

Answers to Summer Math Skills - Mason High School

1) $-14n$
2) $-13n$
3) $-8b$
4) $-14 - p$
5) x
6) $-2n$
7) $-20n - 40$
8) $8 - 53n$
9) $-19m + 16$
10) $39m + 28$
11) $28 + 25m$
12) $-6n - 16$
13) $\{-27\}$
14) $\{-169\}$
15) $\{-12\}$
16) $\{5\}$
17) $\{-17\}$
18) $\{-30\}$
19) $\{0\}$
20) $\{1\}$
21) $\{1\}$
22) $\{1\}$
23) $\{8\}$
24) $\{-3\}$
25) $\{5, -2\}$
26) $\{4, -3\}$
27) $\{8, -5\}$
28) $\{-3, 0\}$
29) $\{-4, -7\}$
30) $\{-8, 3\}$
31) $\{3, -3\}$
32) $\{8, -8\}$
33) $\{0.571, -0.571\}$
34) $\{3, -3\}$
35) $\{0.875, -0.875\}$
36) $\{0.375, -0.375\}$
37) $\{18\}$
38) $\{25\}$
39) $\{1\}$
40) $\{4\}$
41) $\{1\}$
42) $\{12\}$
43) $\{-8\}$
44) $\{12\}$
45) $\{-17\}$
46) $\{6\}$
47) $\{-14\}$
48) $\{-8\}$
49) D
50) B
51) B
52) A
53) C
54) C
55) n^5
56) $3n^4$
57) $6x^2$
58) $2x^5$
59) $6x^5$
60) x^2
61) $m^{12}n^{32}$
62) $u^{40}v^{15}$
63) y^4x^{28}
64) a^8b^{16}
65) $x^{17}y^{19}$
66) $u^{13}v^{28}$
67)



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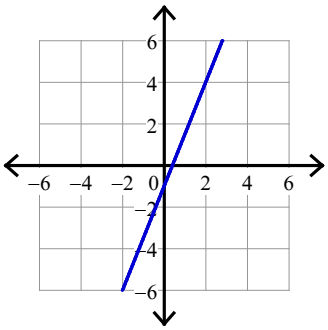

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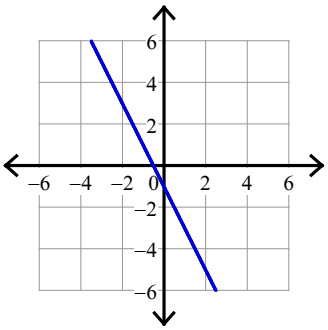

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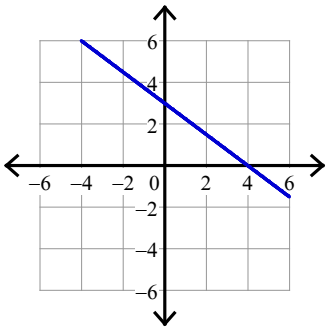

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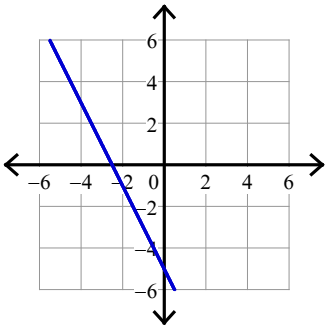

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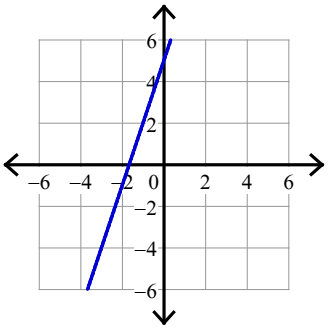

73) $y = \frac{5}{2}x - 1$

74) $y = -\frac{5}{2}x + 5$
75) $y = -3x - 5$
76) $y = \frac{1}{4}x$
77) $y = 4$
78) $y = \frac{1}{2}x + 2$
79) $12p^2 - 5p - 25$
80) $4n^2 + 14n + 12$
81) $6x^2 - 4x - 10$

82) $4r^2 - 8r - 5$
83) $8x^2 - 10x - 12$
84) $10k^2 - 21k + 9$
85) $k^4 + 9k^3 + 4k^2$
86) $-7n^4 + 7n^3 + 2n^2$
87) $r^4 - 13r$
88) $13v^4 - 14v^3 - 2$
89) $-4r^4 + 5r^3 - 5r^2 + 11r$
90) $11n^3 - 11n^2 + 12$
91) $2x\sqrt{5}$
92) $6\sqrt{5r}$
93) $5x\sqrt{7}$
94) $8p\sqrt{2p}$
95) $5n\sqrt{7n}$
96) $2k^2\sqrt{2}$
97) (4, 0)
98) (1, –1)
99) (0, 2)
100) (–2, 0)
101) (–2, –2)
102) (–4, –3)