

Algebra Review – prep for Alg II Answer Key

1. 4 number of terms
2. 2 is the coefficient for the highest degree
3. 5 is the highest exponent
4. 1 coefficient for the term with exponent of 2
5. -7 the number without a variable

6. $-3x^2 + 2x - 7$	7. $12x^2 - 5x + 7$
8. $5x^2y - 8x^2 + 2x^2y^2 - 9y^2$	9. $10x^2 - 23x - 5$
10. $3x^2 + 9x - 14$	11. $2y^3 + y^2 - 8y + 3$

12. $(m + 7)(m - 2)$	13. $(2m + 1)(m - 3)$
14. $3(m^2 + 10m + 7)$	15. $(2m - 9)(2m + 9)$
16. $(3m + 2)(2m - 5)$	17. $3(2m^2 - 7m - 4)$ $3(2m + 1)(m - 4)$

18. $2(-1) - 5(3 - 3) - 4(.5) + 9(-1/3)^2$ $-2 - 5(0) - 2 + 1$ -3	19. $-2(3)^2 + 9(-1/3)$ $-18 - 3$ -21
20. $3(-1/3) - (3)(.5) + (-1) $ $-1 - 1.5 - 1 $ $-1 - .5 \quad -1.5$	21. $\frac{-2(-1) + 4(.5)}{(3)(-1/3)}$ 0

22. $f(-5) = 2(-5) - 3$ $= -10 - 3$ $= -13$	23. $1 = 2x - 3$ $4 = 2x$ $2 = x \quad x = 2$
24. $g(1/2) = 2 - (1/2) + 2(1/2)^2$ $= 2 - 1/2 + 1/2$ $= 2$	25. $g(2) = 2 - 2 + 2(2)^2$ $= 8$ $f(8) = 2(8) - 3$ $= 16 - 3$ $= 13$

26. $11.75 \times 10^4 = 1.175 \times 10^5$

27. $.640625 \times 10^8 = 6.40625 \times 10^7$

28. $2x + 4 = 17$ $\begin{array}{r} -4 \quad -4 \\ 2x = 13 \\ x = 6\frac{1}{2} \end{array}$	29. $x - 6 = 3x + 5$ $\begin{array}{r} -x \quad -x \\ -6 = 2x + 5 \\ -5 \quad -5 \\ -11 = 2x \\ -5\frac{1}{2} = x \\ x = -5\frac{1}{2} \end{array}$	30. $4x - 15 = 3(x + 8)$ $\begin{array}{r} 4x - 15 = 3x + 24 \\ -3x \quad -3x \\ x - 15 = 24 \\ +15 \quad +15 \\ x = 39 \end{array}$
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31. $6x - 2(x + 1) = 25 - 5x$ $\begin{array}{r} 6x - 2x - 2 = 25 - 5x \\ 4x - 2 = 25 - 5x \\ +5x \quad +5x \\ \hline 9x - 2 = 25 \\ +2 \quad +2 \\ 9x = 27 \\ x = 3 \end{array}$	32. $\frac{1}{2}(4x + 3) = 7(x - 5)$ $\begin{array}{r} 2x + 3/2 = 7x - 35 \\ -2x \quad -2x \\ 1.5 = 5x - 35 \\ +35 \quad +35 \\ 36.5 = 5x \\ 7.3 = x \\ x = 7.3 \end{array}$
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33. $\frac{2x-4}{3} = \frac{3+2x}{5}$ $\begin{array}{r} 5(2x-4) = 3(3+2x) \\ 10x-20 = 9+6x \\ -6x \quad -6x \\ 4x-20 = 9 \\ +20 \quad +20 \\ 4x = 29 \\ x = 7.25 \end{array}$	34. $3[2-4(x+3)] = 24-12x$ $\begin{array}{r} 3[2-4x-12] = 24-12x \\ 3[-4x-10] = 24-12x \\ -12x-30 = 24-12x \\ +12x \quad +12x \\ -30 = 24 \\ \text{No solution} \end{array}$
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35. $\sqrt{2x+1} + 5 = 10$ $\begin{array}{r} -5 \quad -5 \\ \sqrt{2x+1} = 5 \quad \text{sq both sides} \\ 2x+1 = 25 \\ -1 \quad -1 \\ 2x = 24 \\ x = 12 \end{array}$	36. $6 = \sqrt{4x-2}$ sq both side $\begin{array}{r} 36 = 4x - 2 \\ +2 \quad +2 \\ 38 = 4x \\ 9.5 = x \\ x = 9.5 \end{array}$
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37. $2 x-7 = 26$ $ x-7 = 13$ $x-7 = 13$ or $x-7 = -13$ $x = 20$ or $x = -6$	38. $4 - 5-2x = 1$ $- 5-2x = -3$ $ 5-2x = 3$ $5-2x = 3$ or $5-2x = -3$ $-2x = -2$ or $-2x = -8$ $x = 1$ or $x = 4$
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39. $A = \frac{1}{2}(b_1 + b_2)h$ $2A = (b_1 + b_2)h$ $\frac{2A}{h} = (b_1 + b_2)$ $\frac{2A}{h} - b_1 = b_2$	40. $P = 2l + 2w$ $P - 2l = 2w$ $\frac{P - 2l}{2} = w$	41. $V = \frac{1}{3}\pi r^2 h$ $3V = \pi r^2 h$ $\frac{3V}{\pi r^2} = h$
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<p>42. $2x + 5 > 12$ $2x > 7$ $x > 3.5$</p> <p>$\{x/x > 3.5\}$</p>	<p>43. $7 - 4x \leq 2x - 3$ $7 \leq 6x - 3$ $10 \leq 6x$ $5/3 \leq x$</p> <p>$\{x : x \geq 5/3\}$</p>	<p>44. $5(1 - 2x) > 15$ $5 - 10x > 15$ $-10x > 10$ $x < -1$</p> <p>$\{x/x < -1\}$</p>
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<p>45. $x + 1 \leq 7$ $x + 1 \leq 7$ and $x + 1 \geq -7$ $x \leq 6$ and $x \geq -8$</p> <p>$\{x / -8 \leq x \leq 6\}$</p>	<p>46. $7x + 4 - 6 \geq 12$ $7x + 4 \geq 18$ $7x + 4 \geq 18$ or $7x + 4 \leq -18$ $7x \geq 14$ or $7x \leq -22$ $x \geq 2$ or $x \leq -22/7$</p> <p>$\{x : x \leq -22/7 \text{ or } x \geq 2\}$</p>
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<p>47. $2x^2 + 5x = 3$ $2x^2 + 5x - 3 = 0$ $(2x - 1)(x + 3) = 0$ $2x - 1 = 0$ or $x + 3 = 0$ $2x = 1$ or $x = -3$ $x = 1/2$ or $x = -3$</p> <p>$\{-3, 1/2\}$</p>	<p>48. $10x^2 - 13x - 3 = 0$ $10x^2 - 15x + 2x - 3 = 0$ $5x(2x - 3) + 1(2x - 3) = 0$ $(5x + 1)(2x - 3) = 0$ $5x + 1 = 0$ or $2x - 3 = 0$ $5x = -1$ or $2x = 3$ $x = -1/5$ or $x = 3/2$</p> <p>$\{-1/5, 3/2\}$</p>
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<p>49. $x^2 + 4 = 4x$ $x^2 - 4x + 4 = 0$ $(x - 2)(x - 2) = 0$ $x - 2 = 0$ $x = 2$</p> <p>$\{2\}$</p>	<p>50. $x^2 - 5x = 7$ $x^2 - 5x - 7 = 0$ Let $a = 1, b = -5$ and $c = -7$ Quadratic formula $\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$</p> <p>$\frac{-(-5) \pm \sqrt{(-5)^2 - 4(1)(-7)}}{2(1)}$</p> <p>$\frac{5 \pm \sqrt{25 + 28}}{2}$</p> <p>$\frac{5 \pm \sqrt{53}}{2}$ (6.14, -1.14)</p>
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<p>51. $(x^3y^4z)^5(xy^2z^3)^{-2}$ $(x^{15}y^{20}z^5)(x^{-2}y^{-4}z^{-6})$ Add exponents $x^{13}y^{16}z^{-1}$ $\frac{x^{13}y^{16}}{z}$</p>	<p>52. $\frac{(-2m^3n^2)^3}{4m^6n^6p}$ $\frac{-8m^9n^6}{4m^6n^6p}$ subtract exponents $\frac{-2m^3}{p}$</p>	<p>53. $(3a^2b^3c)^{-2}(2a^5b^2c)$ Make fraction $\frac{(2a^5b^2c)}{9a^4b^6c^2}$ $\frac{2a}{9b^4c}$</p>
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54. $\frac{\sqrt{45}}{\sqrt{9 \cdot 5}}$ $3\sqrt{5}$	55. $2\sqrt{72} - 4\sqrt{18}$ $2\sqrt{36 \cdot 2} - 4\sqrt{9 \cdot 2}$ $2 \cdot 6\sqrt{2} - 4 \cdot 3\sqrt{2}$ $12\sqrt{2} - 12\sqrt{2}$ 0
56. $\sqrt{27} \cdot \sqrt{6}$ $\sqrt{9 \cdot 3} \cdot \sqrt{6}$ $3\sqrt{3} \cdot \sqrt{6}$ $3\sqrt{18}$ $3\sqrt{9 \cdot 2}$ $3 \cdot 3\sqrt{2}$ $9\sqrt{2}$	57. $5\sqrt{75} + \sqrt{12} - 4\sqrt{48}$ $5\sqrt{25 \cdot 3} + \sqrt{4 \cdot 3} - 4\sqrt{16 \cdot 3}$ $25\sqrt{3} + 2\sqrt{3} - 16\sqrt{3}$ $11\sqrt{3}$

	Point slope form	Intercept form	Standard form
58	$y = 4 + \frac{1}{2}(x + 2)$	$y = 4 + \frac{1}{2}(x + 2)$ $y = 4 + \frac{1}{2}x + 1$ $y = 5 + \frac{1}{2}x$	$y = 5 + \frac{1}{2}x$ $2y = 10 + 1x$ $-1x + 2y = 10$ $x - 2y = -10$
59	slope first (1, -3) (0, 3) $\frac{-3 - 3}{1} = -6$ $y = -3 - 6(x - 1)$	$y = -3 - 6(x - 1)$ $y = -3 - 6x + 6$ $y = 3 - 6x$	$y = 3 - 6x$ $6x + y = 3$
60	Slope (7, -1)(-2, 4) $\frac{-1 - 4}{7 - (-2)} = \frac{-5}{9}$ $y = -1 - 5/9(x - 7)$	$y = -1 - 5/9(x - 7)$ $y = -1 - 5/9x + 35/9$ $y = 26/9 - 5/9x$	$y = 26/9 - 5/9x$ $9y = 26 - 5x$ $5x + 9y = 26$
61	Slope = 0 (horizontal line) $y = 2 + 0(x - 4)$	$y = 2 + 0(x - 4)$ $y = 2$	$y = 2$
62	Slope=undefined (vertical line) $x = -2$	$x = -2$	$x = -2$

63. $2x - 4y = 8$ $\frac{4x + 4y = 8}{6x} = 16$ $x = 16/6$ or $8/3$ $2(8/3) - 4y = 8$ $16/3 - 4y = 8$ $-4y = 8/3$ $y = -2/3$ (8/3, -2/3)	add straight down plug into one equation
64. $y = 2x - 1$ and $3x + y = 4$ $3x + (2x - 1) = 4$ $5x - 1 = 4$ $5x = 5$ $x = 1$ $y = 2(1) - 1$ $y = 1$ (1, 1)	use substitution plug into one equation

65. $2x - 3y = 10$	and	$5x - 5y = 24$	
$5(2x - 3y = 10)$		$10x - 15y = 50$	
$-2(5x - 5y = 24)$		$-10x + 10y = -48$	
		$-5y = 2$	
		$y = -2/5$	
$5x - 5(-2/5) = 24$			
$5x + 2 = 24$			
$5x = 22$			
$x = 22/5$			$(22/5, -2/5)$

66. LET width = w and length = w + 7	
$2(\text{width}) + 2(\text{length}) = 54$	
$2(w) + 2(w + 7) = 54$	
$2w + 2w + 14 = 54$	
$4w = 40$	width = 10
$w = 10$	length = $10 + 7 = 17$

67. $77.72 - 1.00 = 76.72$	
$6(\text{pizza}) \cdot 1.07 = 76.72$	
$6p = 76.76 \div 1.07$	
$6p = 71.70$	
$p = 11.95$	one pizza cost \$11.95

68. $\frac{3 \text{ miles}}{8 \text{ min}} = \frac{20 \text{ miles}}{x \text{ min}}$	
$3x = 160$	
$x = 53.3$	53.333 minutes

69. 70% 75	$.70(75) + 0(x) = .50(x + 75)$
0% x	$52.5 = .5x + 37.5$
50% x + 75	$15 = .5x$
	$30 = x$
	30mL of water

70a. $500 \div 6 = 83.3333$	70a. 83 1/3 hours
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70b. 75% of 6 = 4.5	
$500 \div 4.5 = 111.111$	70b. 111 1/9 hours

71. 5% 8 oz	$.05(8) + x(20) = .15(28)$
x 20 oz	$.4 + 20x = 4.2$
15% 8 + 20 oz	$20x = 3.8$
	$x = .19$
	19% pickling vinegar

72. $7.50 \cdot 1.035 = 7.76$	
$7.76 \cdot 0.035 = 0.27$	
$7.76 - 0.27 = 7.49$	new salary 7.49

73. $500(1.015)^6$	after 6 months = 546.72
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74a. actual temperature = x	74b. $-15 = -29 + 1.4x$
Wind chill temperatura = y	$14 = 1.4x$
	$10 = x$
	When the wind chill is -15 the

actual temp is 10	
75. $1 \text{ cal} = 4.1868 \text{ joules}$ $x \text{ cal} = 470 \text{ joules}$ $470 = 4.1868x$ $112.26 = x$	cross multiply about 112 calories
76a. 2 adult tickets and 3 student tickets will cost \$13.50	
76b. $2(2x + 3y = 13.50)$ $4x + 6y = 27.00$ $-9x - 6y = -48.00$ $-5x = -21$ $x = 4.20$	and $-3(3x + 2y = 16)$ plug 4.20 back in for x $2(4.20) + 3y = 13.50$ $8.40 + 3y = 13.50$ $3y = 5.10$ $y = 1.7$ adult = 4.20 student = 1.70
77a. $y = 106 - 3(x - 10)$	
77b. $0 = 106 - 3(x - 10)$ $-106 = -3x + 30$ $-136 = -3x$ $46 = x$ The box will be empty on the 46 th day	77c. $y = 106 - 3(0 - 10)$ $y = 106 + 30$ $y = 136$ started with 136 biscuits

78. $y = -4 + 2x$ Slope is 2/1 y-intercept is -4	79. $y = - x + 2 + 3$ Absolute value function Reflected over x axis Vertex is (-2, 3)	80. $y = (x - 1)^2 - 4$ Parabola – quadratic function Vertex (1, -4)
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