

Accelerated PreCalculus Summer Review Packet

Instead of being a review of random material that you have previously learned, this assignment provides a very specific review of basic mathematical and algebraic skills that are required for success in Accelerated PreCalculus. You are expected to be completely fluent with these skills so we can apply them in a trigonometric environment. This assignment has been provided for your practice to ensure an easier transition into the study of trigonometry (the major component of a PreCalculus course). Please complete this review to give you a better preparation and opportunity for success this upcoming school year! Show all algebraic work on a separate page. There will be a quiz over this packet on the first day of school.

Solving Linear Equations

Solve for the given variable.

1. $18 + 2n = 4n - 9$

2. $\frac{1}{2}y = \frac{1}{3}y + 2$

3. $\frac{3}{5}d + 5 = \frac{1}{3}d - 3$

4. $\frac{2x-4}{-7} = 3x+5$

5. $3(2x-1) = 9(x+3) - 2(x-1)$

6. $-8\left(\frac{1}{4}n-3\right) = n+2$

Solving Linear Systems of Equations

Solve each system for x and y.

7. $\begin{cases} 3x - 2y = 4 \\ 2x + 2y = 6 \end{cases}$

8. $\begin{cases} 4x + 3y = -5 \\ -2x + 2y = 6 \end{cases}$

9. $\begin{cases} 5x + 6y = 3 \\ -3x - 2y = -5 \end{cases}$

10. $\begin{cases} 4x - 3y = 6 \\ -3x + 2y = -5 \end{cases}$

Simplifying Radicals

Simplify and rationalize each expression. (No decimal answers! No radicals in the denominator!)

11. $\sqrt{12}$

12. $\sqrt{54}$

13. $-\sqrt{200}$

14. $\sqrt{\frac{4}{9}}$

15. $\sqrt{\frac{3}{4}}$

16. $\sqrt{\frac{20}{45}}$

17. $7\sqrt{2} + 4\sqrt{12} - \sqrt{50}$

18. $\sqrt[4]{\frac{8}{9a^3}}$

19. $7^n \cdot 7^{n-1}$

20. $\left(3^{\frac{1}{2}} \cdot 5^{\frac{2}{3}}\right)^{\frac{3}{2}}$

21. $\sqrt[3]{4x} \cdot \sqrt{3x}$

22. $(-8)^{\frac{2}{3}}$

23. A ladder 12 feet long rests against the wall of the house. The foot of the ladder is on level ground 2 feet from the wall. To the nearest degree, what is the measurement of the angle formed between the ladder and the ground?

Order of Operations

Evaluate, without using a calculator. Check your answer using a calculator.

24. $(3 \cdot 5) + 4$

25. $12 \div 3 + 2 \cdot 8$

26. $[(9-7)^2 + 5] + 26$

27. $\frac{8 \cdot 2 + 5}{12 + 2^2 - 9}$

Simplifying Fractions

Simplify, without using a calculator. Check your answer using a calculator.

(Believe it or not, we will start the course with a heavy load of fraction operations – It helps to practice now!)

28. $\frac{2}{5} \cdot \frac{10}{3}$

29. $\frac{4}{5} \div 2$

30. $4 \div \frac{1}{2}$

31. $\frac{3}{5} \cdot 15$

32. $\frac{2}{5} + \frac{3}{4}$

33. $\frac{3}{8} + \frac{1}{6}$

34. $\frac{2}{5} - \frac{3}{4}$

35. $\frac{2}{9} - \frac{1}{3}$

36. $1\frac{2}{5} - 2\frac{1}{3}$

Using Properties of Exponents

37. $(4x^3y^5)(-2xy^3)$

38. $(-5x^4)^2$

39. $(3x^4)(4x^5)(-2x^2)$

40. $\left(\frac{1}{3}x^8y^4\right)^3$

41. $-2(-2x)^3(-3)^2$

42. $\frac{6p^3}{p^{-2}}$

43. $\frac{3x^{12}y^5}{18x^4y^2}$

44. $(3xy^{-2})^{-3}$

45. $\left(\frac{1}{4}x^2y^3z^2\right)\left(\frac{2}{3}xy^4z^5\right)$

46. $(-3x^5y^{-2})(2x^2y^7)$

47. $(2x^3y^0z^3)^4(xy)^0$

48. $\frac{-10x^{-2}y^{-8}}{15x^8y^2}$

Factoring Polynomials

Factor each polynomial completely.

(you cannot even imagine the expressions we'll be factoring in trig ... practice these "easy" ones now!)

49. $y^2 - 5y$

50. $4a^2 + 2a$

51. $7y^3 + 14y^2$

52. $6x^2y^3 + 21xy^2$

53. $x^2 - 16$

54. $9x^2 - 25y^2$

55. $4a^2 - 49$

56. $100y^2 - 81$

57. $6x^2 - 6y^2$

58. $x^2 - 144$

59. $x^3 + 6x^2 + 2x + 12$

60. $m^3 - m^2 - 3m + 3$

61. $w^2 - 14w + 45$

62. $x^2 + 2x - 24$

63. $r^2 + 12r + 20$

64. $y^2 - 15y + 54$

65. $g^2 - 5g + 6$

66. $k^2 - k - 20$

67. $x^2 - 9x$

68. $9x^2y - 12xy^2$

69. $y^2 - 10y + 25$

70. $x^3 - 4x + 5x^2 - 20$

71. $3y + y^2 - 28$

72. $x - 12\sqrt{x} + 20$

Solving Equations

Solve for the given variable.

73. $27x^3 - 1 = 0$

74. $x^4 - 16 = 0$

75. $s^2 + 10s = 0$

76. $x^2 - 169 = 0$

77. $2x^2 + 15x = -7$

78. $25x^6 - 4x^2 = 0$

79. $\sqrt{3x-2} = 2$

80. $\sqrt{x+1} - 4 = 1$

81. $3\sqrt{a-2} = \sqrt{8a+1}$

82. $\sqrt{y+7} = -6$