

Trigonometry and Elementary Functions

Math Maintenance Assignment

Welcome to Trigonometry and Elementary Functions! In order to ensure success in this course, this is a mandatory summer assignment packet. This packet is due on the first day of your math class whether it occurs in the first or second semester. While it is best to not put the assignment off to the last minute, you want to complete the assignment close enough to the start of your course so that the ideas are fresh. There will be an assessment on this material the first week of class, after the packet has been reviewed.

All topics in this assignment should be a review. You should not only be familiar with the topics but you should know them well enough to be tested on them. This is material that will not be taught in the course. It is expected that you come in with a strong understanding of these topics. If you are unsure of how to do these problems, feel free to seek help with them. There are many websites with helpful videos including Khan Academy, YouTube, MathisFun.com, PurpleMath.com, Shmoop.com, and Algebrahelp.com.

Give us your best work while giving yourself the opportunity to get off to a great start! We look forward to having you in class!!

Sincerely,

The Math Department

TRIGONOMETRY AND ELEMENTARY FUNCTIONS

1. Equations and Inequalities

Solve each equation.

1. $4(x + 5) - (-x + 2) = 2x + 6$. 2. $\frac{3}{5}x = \frac{2}{3}x + 1$ 3. $4n + 8 = 2(2n - 5)$

4. $64 - 36x = 4(-9x + 16)$ 5. $\frac{2}{3}x - \frac{1}{12} = x + \frac{1}{8}$

6. You are ordering t-shirts from a catalog. Each t-shirt cost \$15. The cost of shipping is \$6 no matter how many you order.

a) Write an equation to model this situation

b) If your total cost is \$111, how many t-shirts did you order?

7. A salesperson at a car dealership has a base salary of \$25,000 per year and earns a 5% commission on total sales.

a) Write an equation to model this situation.

c) How much must the salesperson sell to earn \$50,000 in one year?

Solve each inequality and graph on a number line.

8. $x - 20 \geq -11$ 9. $-3 - 6(4x + 6) > -111$ 10. $5x + 2 > 5x + 3$

11. $2 < 3x - 1 < 6$ 12. $2 + 3x < -13$ or $4 + 2x > 7$

Solve each absolute value equation.

13. $|x + 5| = 4$ 14. $\left|\frac{2}{3}x - 6\right| = 12$ 15. $|2x + 3| = -5$

2. LINEAR EQUATIONS AND FUNCTIONS

Write the equation for each line in slope-intercept form

16. $m = 4$ and passes through $(2, 5)$

17. $m = \frac{-1}{2}$ and passes through $(6, 0)$

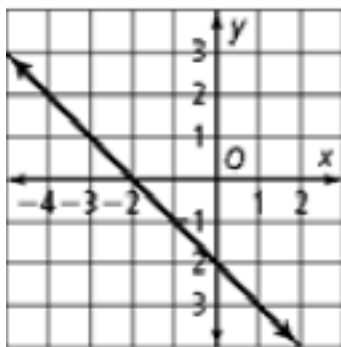
18. $m = 0$ and passes through $(5, 4)$

19. $(2, 8)$ and $(6, 12)$

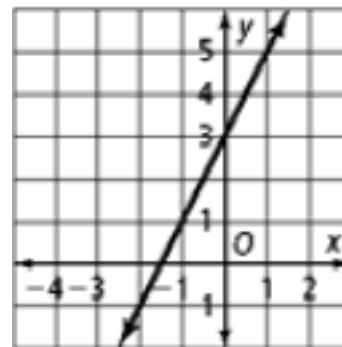
20. through $(-2, 5)$ and parallel to $y = 3x + 1$

21. through $(3, 1)$ and perpendicular to $y = -4x + 1$

22.

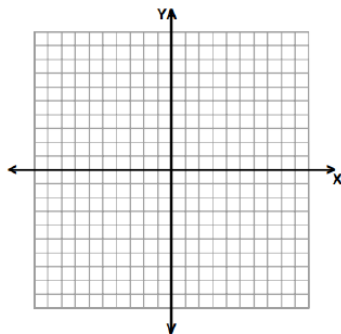


23.

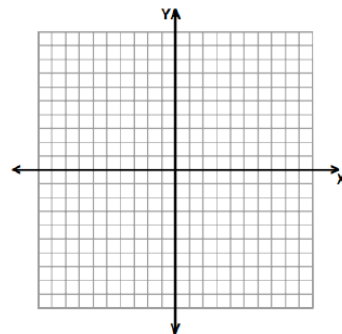


Graph the equation and inequality.

24. $-3x - y = 4$



25. $y > 2x - 4$



Evaluate the functions for the given value.

$$f(x) = 2x - 5$$

26. $f(4)$

$$g(x) = 3x^2 + 1$$

27. $g(-2)$

$$h(x) = \frac{12}{x}$$

28. Find x if $h(x) = -3$

3. EXPONENTS

Simplify using exponent rules. Assume that no variable equals zero. Your answers should contain only positive exponents.

29. $x^2y^4 \cdot 2yx^2$

30. $(3x^4)^3$

31. $(2x^0)^4$

32. $\frac{x^{-2}y}{x^4y^{-1}}$

33. $\frac{12a^8b^6}{-9ab^4}$

34. $\frac{(2x)^2x^2}{x^4}$

4. POLYNOMIAL MULTIPLICATION

Multiply. Write your answer in simplest form.

35. $5x^2(x - 3)$

36. $(x^2 + 4)(x - 5)$

37. $(x + 4)(x^2 - 5x + 2)$

38. $(2x - 5)(2x + 5)$

39. $(x + 10)^2$

40. $(2x - y)(x + 3y)$

41. $(x + 7)(x - 8)(x + 1)$

5. FACTORING

Factor the expression completely. If expression cannot be factored, write "not factorable."

42. $3x^2 + 3x - 6$

43. $2x^2 - 5x - 12$

44. $10x^2 + 3x - 18$

45. $x^2 - 4x + 4$

46. $16x^2 + 88x + 121$

47. $x^2 - 9$

48. $9x^2 - 6xy + y^2$

49. $15x^2 - 36x$

50. $36x^2 + 24x + 4$

Solve by factoring

51. $(5x - 1)(x + 2) = 0$

52. $x^2 = 9x - 20$

53. $7x^2 + 32 = 7 - 40x$

6. QUADRATIC FORMULA

Solve by using the quadratic formula

54. $2x^2 - 5x + 3 = 0$

55. $9x^2 - 11 = 6x$

56. $4x^2 + 4x - 8 = 1$

7. SIMPLIFYING RADICALS

Simplify the expressions

57. $\sqrt{121}$

58. $\sqrt{72}$

59. $\sqrt{2} \cdot \sqrt{6}$

60. $5\sqrt{12}$

61. $\sqrt{\frac{16}{25}}$

62. $\frac{2\sqrt{15}}{\sqrt{4}}$

63. $\sqrt{\frac{3}{16}}$

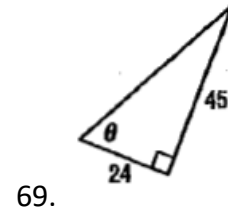
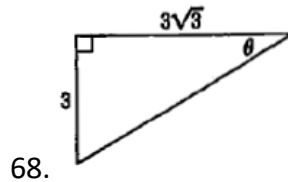
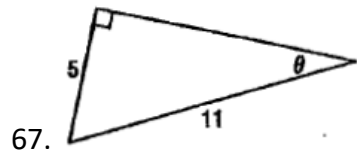
64. $\sqrt{\frac{4}{5}}$

65. $-\sqrt{10} \cdot -\sqrt{15}$

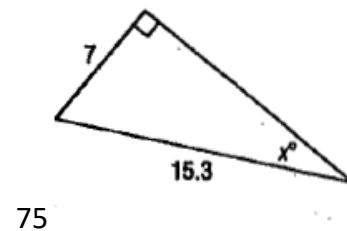
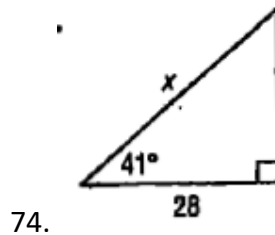
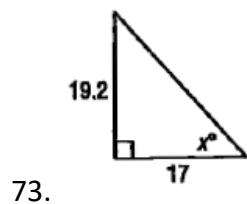
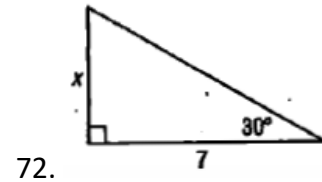
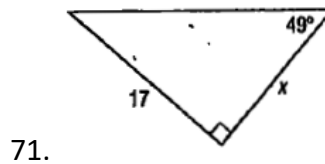
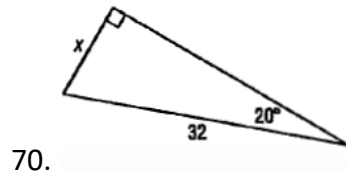
66. $3\sqrt{24} - \sqrt{45} + 3\sqrt{45}$

8. RIGHT TRIANGLE TRIGONOMETRY

Find the values of sine, cosine and tangent of θ . Write your answer in simplest fraction form and/or radical form (rationalize your denominator)



Write an equation involving sine, cosine, or tangent that can be used to solve for x . Round answers to the nearest tenth.



76. Solve for all missing parts of the triangle ABC using the given measurements. Round answers to the nearest tenth.

$$A = 35^\circ, a = 12$$

