Advanced Math/Trigonometry
Summer Practice 2026

Purpose:

The problems included in this packet are intended to be a review of some of the skills and concepts that you learned in Algebra I, Geometry, and Algebra II and will need to know to be successful in your Advanced Math/Trigonometry class.

Expectations:

- Students are expected to complete this assignment independently / without the help of a tutor.
- For each question in this assignment, show all your work on loose leaf paper.
    - Your work must be clearly labeled and easy to follow.
- Box your final answers.
- Check your final answers with the key.
- **This assignment will be graded for completion and entered as a quiz grade.**
- **This assignment is DUE on the first day of your Advanced Math/Trigonometry class.**
    - **If you turn in this assignment after the first day of school, 10 percentage points will be deducted for each day it is late.**

As a member of the Sacred Heart Community,
I pledge to act in a moral, ethical, honest, and honorable way in all that I do.

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Student Signature

Solve each equation. Check your answer.

1. $-67 = -8n + 5$ 2. $22 = 7 - 3a$ 3. $2x + 23 = 29$

4. $-6 - 3(2k + 4) = 18$ 5. $-w + 4(w - 3) = -12$ 6. $5(t - 3) - 2t = -30$

Write an equation to model each situation. Then Solve.

7. The perimeter of a pool table is 30 feet. The table is twice as long as it is wide. What is the length of the pool table?

8. Victoria weighs five sevenths as much as Mario. Victoria weighs 125 pounds. How much does Mario weigh?

9. The length of a rectangle is 4 inches greater than the width. The perimeter of the rectangle is 24 inches. Find the dimensions of the rectangle.

10. The length of a rectangle is twice the width. The perimeter is 48 inches. Find the dimensions of the rectangle.

11. Each of the two congruent sides of an isosceles triangle is 8 inches less than twice the base. The perimeter of the triangle is 74 inches. What is the length of the base?

Solve each formula in terms of the given variable.

12. $2(j + k) = m$; $\boldsymbol{k}$ 13. $5d - 2g = 9$; $\boldsymbol{g}$ 14. $y = mx + b$; $\boldsymbol{x}$

Simplify each expression.

15. 3×8^0 16. $(16)(2^{-2})$ 17. $(-9)^2$ 18. -9^2

19. $(3ad^4)(5d^8)^2$ 20. $(8m^4)(4m^8)$ 21. $(2r^4s^3)^2(9rs^2)$

Simplify completely.

22. $(2x^2 + 3 - x) - (2 + 2x^2 - 5x)$ 23. $(x^3 + 3x) - (x^2 + 6 - 4x)$

Multiply and express each answer in simplest form.

24. $(3x + 5)(5x - 7)$

25. $(x - 5)(2x^2 - 7x - 2)$

26. $(4x - 7)(2x - 5)$

27. $(y^2 - 4w^2)^2$

28. $(4a - 3y)^2$

29. $(3y + 2a)(3y - 2a)$

Factor each expression.

30. $y^2 - 16y + 64$

31. $n^2 + 10n + 25$

32. $r^2 - 14r - 51$

33. $x^2 + 3x - 40$

34. $15x^2 - 19x + 6$

35. $8y^2 + 17y + 9$

36. $4r^2 - 25$

37. $2x^3 + 40x^2 + 200x$

38. $8x^3 - 32x$

Solve by factoring.

39. $x^2 - 9x - 10 = 0$

40. $2a^2 - 21a - 65 = 0$

41. $x^2 + 6x - 91 = 0$

42. $x^2 - 225 = 0$

Use the quadratic formula to solve the equations.
Write your answers in simplest radical form.

43. $x^2 + 8x + 5 = 0$

44. $x^2 + 3x + 8 = 0$

Solve each equation by finding square roots.

45. $x^2 + 18 = 90$

46. $4x^2 - 3 = 2$

Simplify each radical expression. Assume that all variables under radicals represent positive numbers.

47. $\sqrt{32}$

48. $\sqrt{24}$

49. $3\sqrt{27}$

50. $(4\sqrt{3})(2\sqrt{6})$

51. $4\sqrt{3} + 2\sqrt{12}$

52. $4(4\sqrt{3} + 2\sqrt{12})$

Rationalize the denominator. Show your work.

53. $\frac{3}{\sqrt{5}}$

54. $\frac{\sqrt{8}}{\sqrt{3}}$

55. $\sqrt{\frac{5}{2}}$

Find the missing length to the nearest tenth.

56. A ladder is 25 feet long. The ladder needs to reach a window that is 24 feet above the ground. How far away from the building should the bottom of the ladder be placed?

ANSWERS

1. n = 9
2. a = -5
3. x = 13
4. k = -6
5. w = 0
6. t = -5
7. width = 5 ft, length = 10 ft
8. Mario weighs 175 pounds
9. width = 4 in, length = 8 in
10. width = 8 in, length = 16 in
11. Base = 18 in
12. $k = \frac{m - 2j}{2}$
13. $g = \frac{-9 + 5d}{2}$
14. $x = \frac{y - b}{m}$
15. 3
16. 4
17. 81
18. -81
19. $75ad^{20}$
20. $-32m^{12}$
21. $36r^9s^8$
22. 4x + 1
23. $x^3 - x^2 + 7x - 6$
24. $15x^2 + 4x - 35$
25. $2x^3 - 17x^2 + 33x + 10$
26. $8x^2 - 34x + 35$
27. $y^4 - 8w^2y^2 + 16w^4$
28. $16a^2 - 24ay + 9y^2$
29. $9y^2 - 4a^2$
30. $(y - 8)^2$
31. $(n + 5)^2$
32. $(r + 3)(r - 17)$
33. $(x - 5)(x + 8)$
34. $(5x - 3)(3x - 6)$
35. $(y + 1)(8y + 9)$
36. $(2r + 5)(2r - 5)$
37. $2x(x + 10)^2$
38. $8x(x + 2)(x - 2)$
39. 10, -1
40. $-\frac{5}{2}, 13$
41. 7, -13
42. 15, -15
43. $-4 \pm \sqrt{11}$
44. $-\frac{3}{2} \pm \frac{i\sqrt{23}}{2}$
45. $\pm 6\sqrt{2}$
46. $\pm \frac{\sqrt{5}}{2}$
47. $4\sqrt{2}$
48. $2\sqrt{6}$
49. $9\sqrt{3}$
50. $24\sqrt{2}$
51. $8\sqrt{3}$
52. $32\sqrt{3}$
53. $\frac{3\sqrt{5}}{5}$
54. $\frac{2\sqrt{6}}{3}$
55. $\frac{\sqrt{10}}{2}$
56. 7 ft