

Pre-Calculus A Summer Packet

2025-2026

Name: _____

Welcome to Pre-Calculus A. Before you begin this Fall, you need to review some of your Algebra 1, Geometry, and Algebra 2 skills. The goal of this packet is to review material you've learned in previous math courses and get you thinking about math. These skills are foundational to your success in Pre-Calculus A. Therefore, take some time to complete the following problems. **Calculators should be used sparingly.** These problems are designed for you to review algebra and geometry concepts and skills that will provide the foundation for your work in Pre-Calculus. Remember, question marks do not answer the problem. If you are struggling, please feel free to use online resources to help you.

This packet is **due on the first day of school.** It will be graded for points. Each problem should be completed in the space provided. **All work leading to your answers MUST be shown neatly in order to receive full credit.** If you need more space, please use a separate sheet of paper with the topic and problems labelled.

We suggest that you do not wait until the day before school starts as this assignment will take time. It is strongly encouraged that you complete this over several days and highlight areas in which you may have questions. However, you need to attempt every problem. Question marks do not answer the problem and leaving answers blank is not acceptable. Remember, this assignment is your first introduction of your work to me. **Impress us.**

If you have any questions regarding this packet, please reach out to any of the Pre-Calculus A teachers and indicate that it is a summer assignment question in the subject heading. Please keep in mind that we will be away for portions of the summer and may not get back to you immediately.

Have a good summer and see you in the Fall.

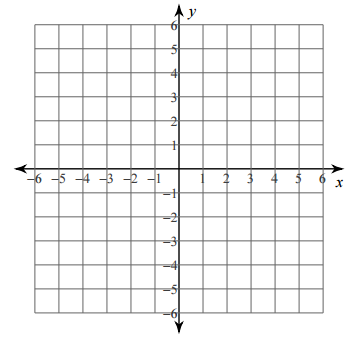
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Linear Functions

1. Sketch the graph of the line $y = -\frac{2}{3}x + 4$. Name the slope and y-intercept.



2. Write the equation of a line that passes through $(-1, 4)$ and $(5, -2)$. Write your answer in slope y-intercept form.

3. Write the equation of a line that is parallel to the line $y = \frac{3}{4}x - 5$ and goes through the point $(8, -2)$. Write your answer in slope y-intercept form.

4. Write the equation of a line that is perpendicular to the line $y = \frac{1}{3}x + 2$ and goes through the point $(-1, 6)$. Write your answer in slope y-intercept form.

Solving Equations

Solve each equation.

5. $3x - 2(x + 5) = 10$

6. $75 = 3(-6n - 5)$

7. $\frac{1}{x-4} = 8$

8. $10x = 5x^2$

9. $x^2 - 11x + 30 = 0$

10. $15 + x - 2x^2 = 0$

11. $(x+2)^{\frac{3}{4}} = 27$

12. $\sqrt{x+4} = 3$

13. $|x-5| = 10$

Rational Expressions**Simplify each rational expression.**

14.
$$\frac{6x^2 + 24x}{x^3 + 8x^2 + 16x}$$

15.
$$\frac{9k^2 - 4}{3k^2 - 16k - 12}$$

16.
$$\frac{3-x}{x^2+x-12}$$

17.
$$\frac{x}{x^2+8x+15} \cdot \frac{2x+10}{x^2}$$

18.
$$\frac{a^2 - b^2}{a-b} \cdot \frac{7}{a+b}$$

19.
$$\frac{2m^2 + 7m - 15}{m+5} \div \frac{9m^2 - 4}{3m+2}$$

Geometry Review

Simplifying Radicals:

Simplify the following radicals.

1. $\sqrt{75}$

2. $\sqrt{72}$

3. $\sqrt{128}$

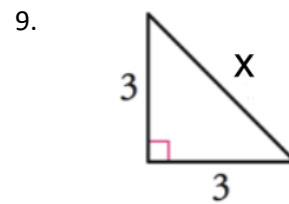
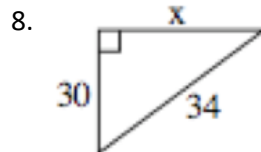
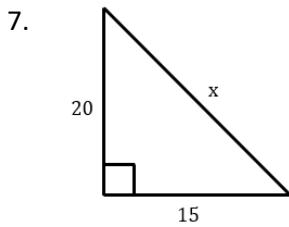
4. $\sqrt{200}$

5. $\sqrt{18}$

6. $\sqrt{147}$

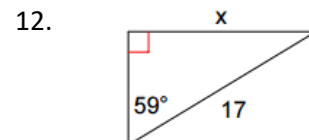
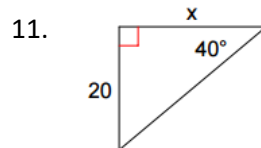
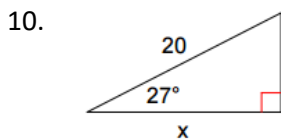
Pythagorean Theorem:

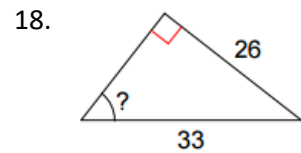
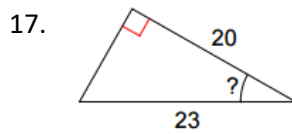
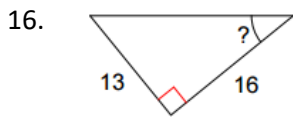
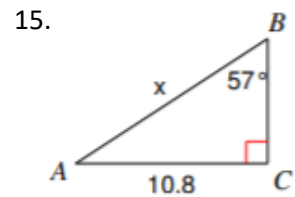
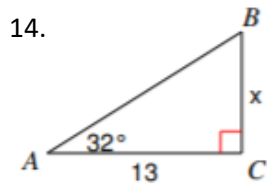
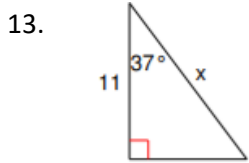
Use the Pythagorean Theorem to find the missing side of each triangle. Answers in simplest radical form.



Right Triangle Trigonometry:

Use either sine, cosine, or tangent to find the missing measure in each triangle. Round answers to the nearest thousandth.

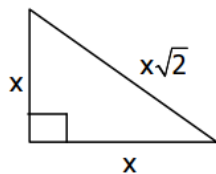




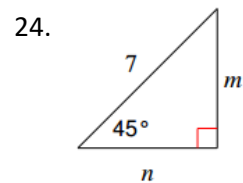
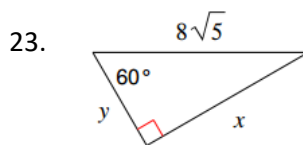
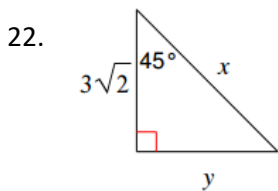
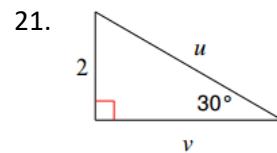
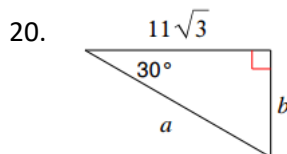
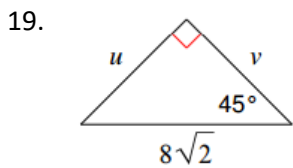
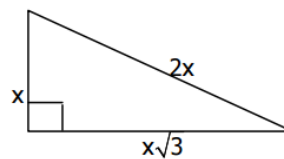
Special Right Triangles:

Find each missing length on each triangle using the following special right triangle relationships. Leave answers in simplest radical form (no decimals).

45° - 45° - 90° Triangle

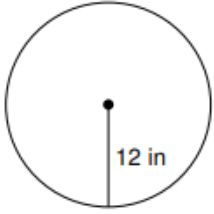


30° - 60° - 90° Triangle

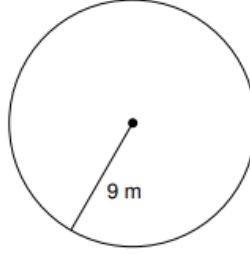


Circles

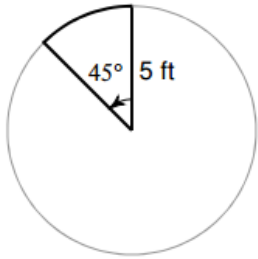
25. Find the area and circumference of the circle.



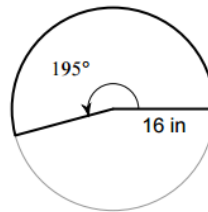
26. Find the area and circumference of the circle.



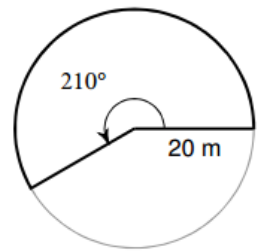
27. Find the length of the arc.



28. Find the length of the arc.



29. Find the area of the sector.



30. Find the area of the sector.

