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Dear Parents/Guardians of students entering AP Pre-Calculus in September 2026,

This summer your child will have the opportunity to prevent summer learning loss and to build a strong foundation in priority Pre-Calculus skills. **The Summer Bridges assignment is the first required assignment for AP Pre-Calculus. Students should also be prepared to be assessed on these skills during the first two weeks of school.**

Note: The assignment is attached to this letter. In order to receive credit, students must show ALL written work and submit it to their teacher by September 10, 2026.

Also, please do not wait until the end of summer to begin these skills.

Dawn Aiello
Director of Mathematics

Bridges from Algebra 2

to AP Precalculus

Name:_____

Class:_____

Directions: Show all work to receive full credit. You may attach additional pages if necessary.

Topic 1: Polynomials

Factor each polynomial completely AND find all zeros.

1) $x^2 + 9x - 70 = 0$

2) $x^2 - 2x - 24 = 0$

3) $x^2 - 225 = 0$

4) $10x^2 + 25x = 0$

5) $2x^2 - 32 = 0$

6) $x^2 - 6x + 9 = 0$

7) $6x^2 - 17x - 14 = 0$

8) $4x^2 + 21x - 18 = 0$

9) $5x^2 - 18x - 8 = 0$

10) $-15x^2 + 17x - 4 = 0$

11) $2x^3 + 4x^2 - 6x = 0$

12) $-49x^2 + 4 = 0$

Perform the indicated operation. Write the final answer in standard form.

13) $(2x^2 + 7x + 11) - (8x^2 - 5x + 7)$

14) $(4x^3 + 7x - 5) + (9x^3 - 4x^2 + 3)$

15) $(4x^5 - 5x^6)(4x^5 + 5x^6)$

16) $(3x^2 + 2x - 1)(x^3 + 3x - 4)$

17) $\dfrac{x^2 + 1}{x + 4}$

18) The polynomial $p(x) = x^3 - 6x^2 + 32$ has a known factor of $(x - 4)$. Rewrite $p(x)$ as a product of linear factors. Show all work.

19) The polynomial $p(x) = x^3 + 3x^2 - 4$ has a known factor of $(x - 1)$. Rewrite $p(x)$ as a product of linear factors. Show all work.

20) The polynomial $p(x) = 2x^3 + 17x^2 + 41x + 30$ has a known factor of $(x + 5)$. Rewrite $p(x)$ as a product of linear factors. Show all work.

Topic 2: Domain

Find the domain of the following expressions. Write all answers in interval form.

Reminders: The denominator of a fraction $\neq 0$.

The radicand of an even index radical ≥ 0.

[ ] values are included in the domain; ( ) values are excluded from the domain.

1) $3x^2 + 2x - 1$

2) $\dfrac{4}{3x}$

3) $\dfrac{\sqrt{x}}{x - 4}$

4) $\dfrac{1}{4x^2 - 25}$

5) $\dfrac{1}{\sqrt{(2x - 1)}}$

6) $\sqrt{(x + 6)}$

7) $\sqrt{(x^2 - 49)}$

8) $\dfrac{1}{x^2 + 3x - 18}$

Topic 3: Complex Numbers

Express the radical using the imaginary unit i. Simplify completely.

1) $\pm\sqrt{-35}$ 2) $\pm\sqrt{-24}$ 3) $\pm\sqrt{-98}$ 4) $\pm\sqrt{-150}$

Simplify. Show how you arrived at your answer:

5) i^{15} 6) i^{80} 7) $-i^{11}$ 8) $2i^{26}$

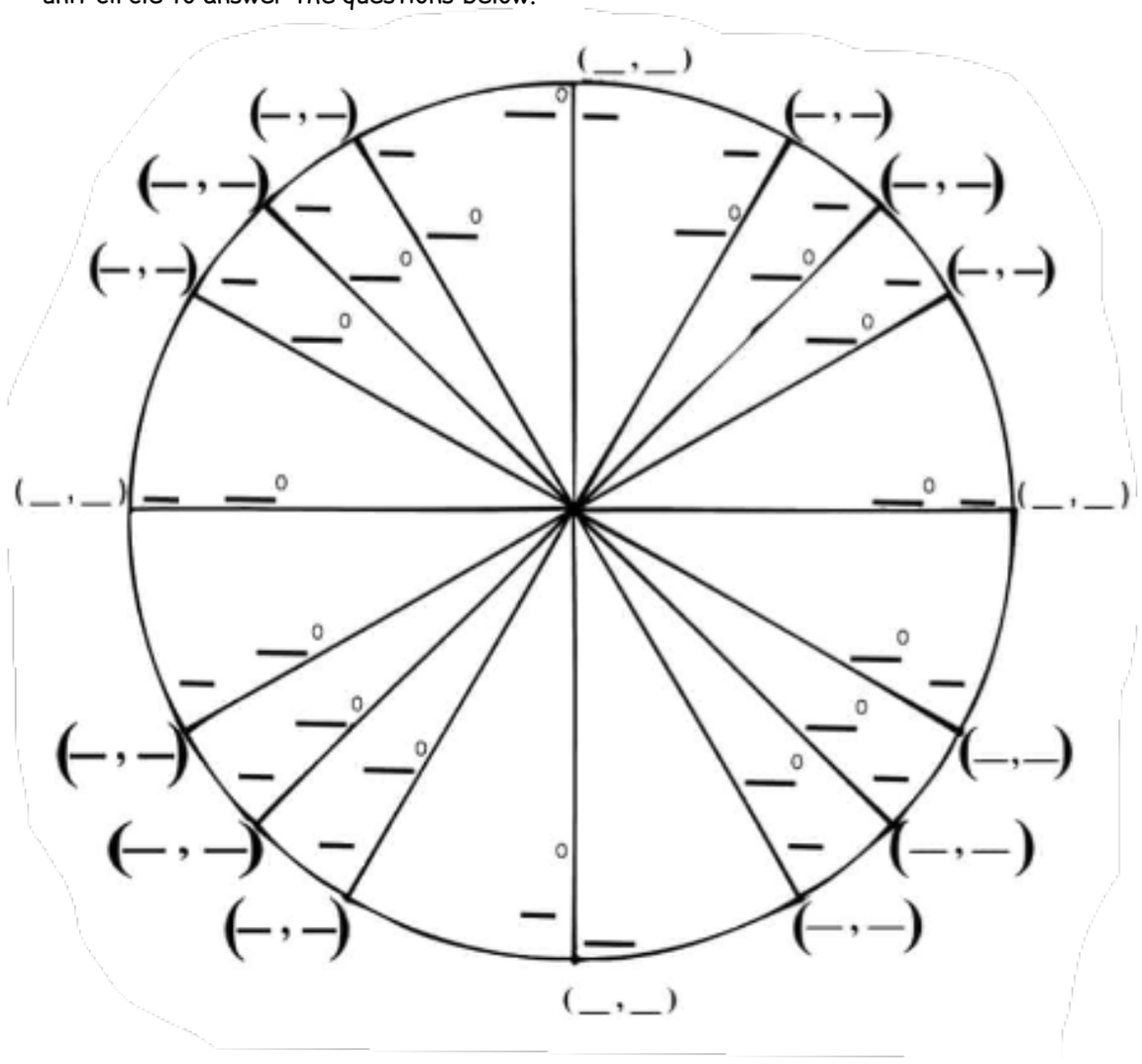
Perform each operation and simplify:

9) $(1 + i)(3 - 5i)$ 10) $(1 - 5i)(3 - 2i)$ 11) $2i - (3i + 7)$

12) Find the solutions of the quadratic equation $6x^2 + 5x + 4 = 0$. Express your answer in the form $a \pm bi$.

Topic 4: The Unit Circle

Fill in the unit circle. Include angle measures in both radians and degrees. Then, use the unit circle to answer the questions below.



Find the exact value of each trigonometric function.

1) $\sin 210^\circ$ 2) $\cos \frac{5\pi}{6}$ 3) $\tan \frac{7\pi}{4}$ 4) $\cot \pi$

5) $\sec 90^\circ$ 6) $\sin \frac{3\pi}{2}$ 7) $\csc 120^\circ$ 8) $\tan \frac{11\pi}{6}$

Find all possible values for θ using trigonometric inverses.

9) $\sin\theta = \frac{\sqrt{3}}{2}$ 10) $\cos\theta = \frac{-1}{2}$ 11) $\tan\theta = -1$ 12) $\sin\theta = \frac{\sqrt{2}}{2}$