

PreCalculus level 3

Summer Packet

This packet of exercises reflects skills that the Math Department considers essential for your success in PreCalculus!

In this packet you will find the following:

- Questions on material previously learned in both Algebra 1/2 and Geometry.
- Topics from Khan Academy referenced in the directions for each problem set. If you are having difficulty recalling how to do a specific type of problem, the Khan Academy videos are an excellent resource for re-teaching. Go to www.khanacademy.org, type in the phrase provided, and it will take you to a video(s) about the topic. Khan Academy also provides further practice on the topics that you can do for your own self-assessment.

Your Responsibility is to:

- Complete all problems and show all necessary work **clearly and carefully**
- Turn in the packet on **THE FIRST DAY OF SCHOOL!** It will be collected and checked for completion on the first day of school.

You will be tested on the material within the first two weeks of school.

Have a great summer!

Pre-Calculus Level 3 Summer Packet

Date _____ Period _____

Simplify. Your answer should contain only positive exponents. (Khan Academy Topic: simplifying expressions with exponents)

1) $3u^{-3}v^4 \cdot 3u^{-1}v^0$

2) $3x^0 \cdot 4y^2$

3) $3a^{-2}b^{-3} \cdot 2a^3b^3$

4) $4xy^3 \cdot x^{-2} \cdot 2x^3y^4$

Find each product. (Khan Academy Topic: Multiplying Binomials)

5) $(-5r - 2)(-4r + 2)$

6) $(-2n + 1)(4n + 1)$

7) $(5v - 6)^2$

Simplify each difference. (Khan Academy Topic: Polynomial basics)

8) $(2b^4 + 8b^2 + 8b^3) - (3b^4 + 7b^2 - 5)$

9) $(2p^3 + 2 + 7p) - (p - 5p^3 + 1)$

Solve each equation by factoring. (Khan Academy Topic: Solving a quadratic by factoring)

10) $a^2 - 6a = 7$

11) $k^2 + k - 20 = 0$

Factor each completely. (Khan Academy Topic: Factoring quadratics)

12) $2n^2 - 200$

Simplify. (Khan Academy Topic: "Simplifying Radical Expressions")

13) $\frac{\sqrt{5x^3y}}{\sqrt{2x^4y^4}}$

14) $\frac{\sqrt{8x}}{\sqrt{10x}}$

15) $(7 - 6i) - (3 - 6i)$

16) $(5 + i)^2$

Solve each equation with the quadratic formula.(Khan Academy Topic: "How to Use the Quadratic Formula")

17) $3n^2 = -4n + 16$

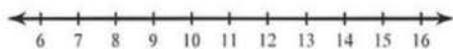
18) $12x^2 + 8 = -12x$

Solve each equation. Remember to check for extraneous solutions.(Khan Academy Topic: "Equations with Square Roots and Cube Roots")

19) $\sqrt{2r + 2} = \sqrt{3r - 2}$

Solve each inequality and graph its solution.(Khan Academy Topic: "Graphing Inequalities 1 and 2")

20) $129 \geq -3(-3 - 5x)$



Solve each equation.(Khan Academy Topic: "Solving Absolute Value Equations")

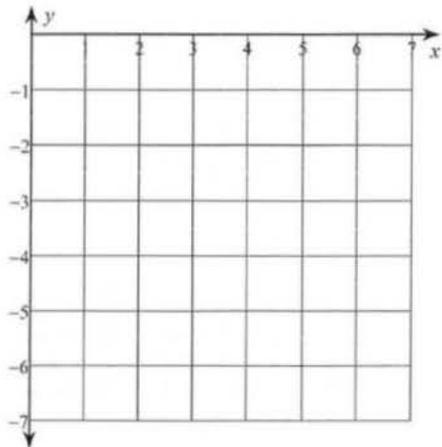
21) $\left| \frac{x}{9} \right| = 3$

Find the inverse of each function.(Khan Academy Topic: "Inverse Functions")

22) $g(x) = 4x$

Sketch the graph of each function. (Khan Academy Topic: "Quadratics and shifts")

23) $y = -x^2 + 8x - 18$



24) $y = \frac{1}{2}(x - 2)^2 + 2$

