

# **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](http://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")**

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

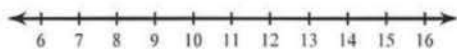
$$18) 12x^2 + 8 = -12x$$

**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")**

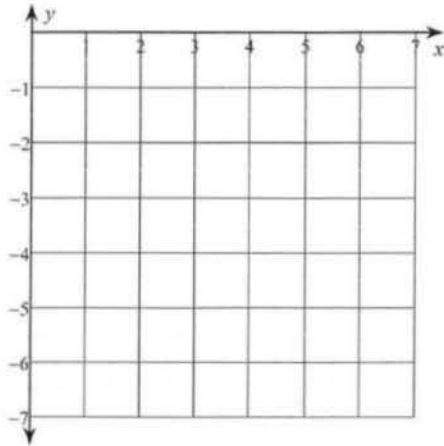
21)  $\left| \frac{x}{9} \right| = 3$

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

