

## Precalculus– Summer Packet

### **Congratulations! Welcome to Precalculus!**

Going into Precalculus, there are certain skills that have been taught to you over the previous years that we assume you have. This summer packet is intended for you to brush up and possibly relearn these topics.

We assume that you have basic skills in Algebra. Being able to solve equations, work with algebraic expressions, factoring, for example should now be a part of you. If not, you would not be going onto Precalculus. So topics that we think you absolutely need to know are included here.

**Please do each problem only in the space provided.** Additional pages will not be graded. So work in pencil so you can make corrections. If you are unsure of how to attempt these problems, look at your notes, websites or talk to friends. Building a small study group from now that can be your support group next year as well is a good idea. Do not fake your way through these problems. Make sure you understand how to do all these by the end.

This packet is due the first day back in school in the fall. **It will be graded.** Be sure your name appears on the first sheet and all sheets are stapled together. All work needs to be shown. Also, do not rely on your calculator. So try and do as much as you can without a calculator – even the graphs. Remember the graphs are just sketches with intercepts, asymptotes and end behavior being the most important.

It is a mistake to decide to do this now. Let it go until mid-summer. We want these techniques to be relatively fresh in your mind in the fall. Also, do not wait to do them at the very last minute. These take time.

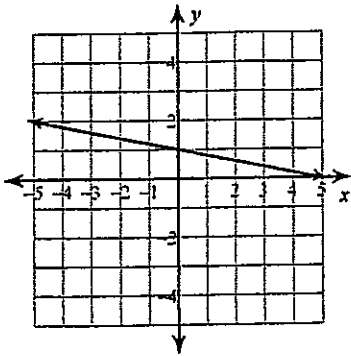
We look forward to seeing you in September.

PrecalculusTeachers  
Westhill High School

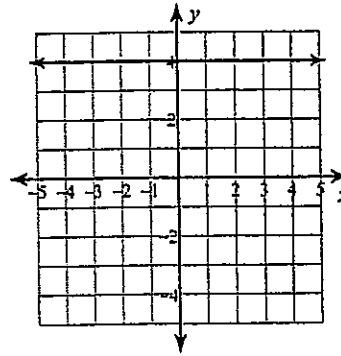
# Summer Packet

**Slope-Intercept Form - Write the slope-intercept form of the equation of each line.**

1)



2)



**Slope-Intercept Form - Write the slope-intercept form of the equation of the line through the given point with the given slope.**

3) through:  $(3, 1)$ , slope =  $\frac{1}{3}$

**Slope-Intercept Form - Write the slope-intercept form of the equation of the line through the given points.**

4) through:  $(-1, -3)$  and  $(0, 1)$

**Point-Slope Form - Write the point-slope form of the equation of the line through the given points.**

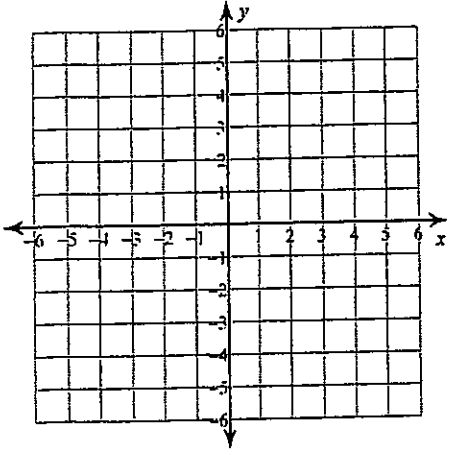
5) through:  $(-3, 5)$  and  $(0, 1)$

**Slope-Intercept Form - Write the slope-intercept form of the equation of the line described.**

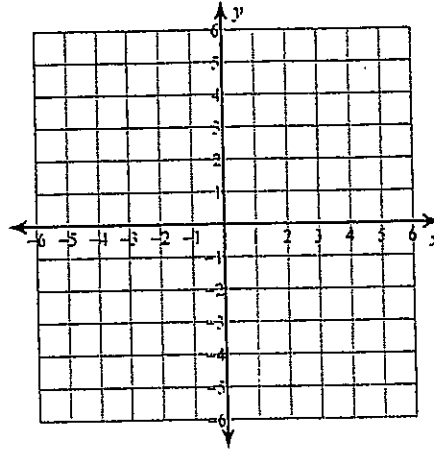
6) through:  $(-3, -2)$ , perp. to  $y = -\frac{3}{7}x - 4$

**Graphing Linear Equations - Sketch the graph of each line.**

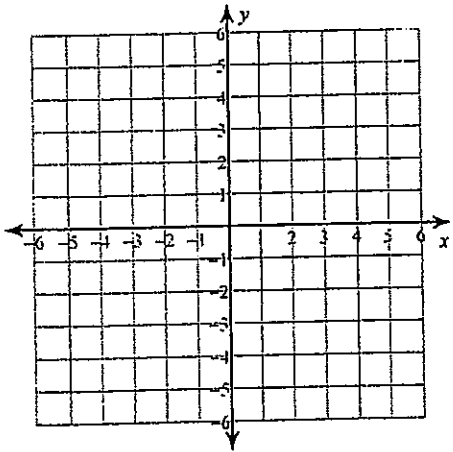
7)  $x$ -intercept =  $-1$ ,  $y$ -intercept =  $-2$



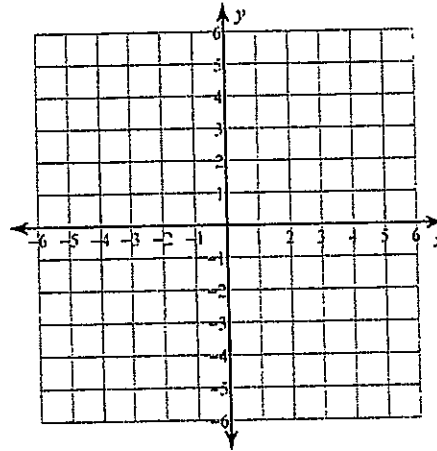
8)  $y = \frac{3}{4}x + 1$



9)  $20 = x + 5y$

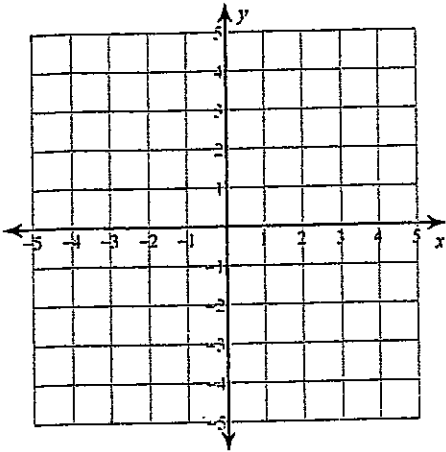


10)  $-7x - 2y = -4$

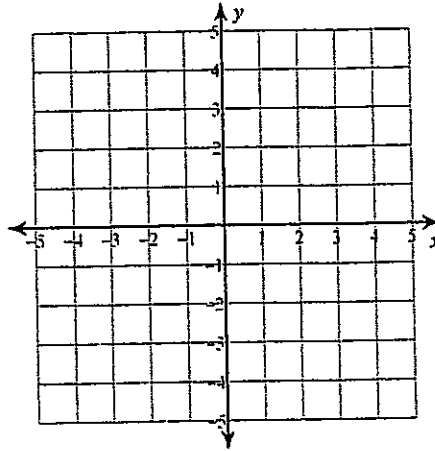


**Solving by Graphing - Solve each system by graphing.**

11)  $y = -x - 3$   
 $y = -6x + 2$



12)  $5x + 2y = 8$   
 $3x - 2y = 8$



**Solving Using Substitution - Solve each system by substitution.**

13)  $2x + 7y = 5$   
 $x - 8y = 14$

**Solving Using Elimination - Solve each system by elimination.**

14)  $-4x - 5y = -3$   
 $-9x - 15y = 12$

15)  $-x + 6y - 2z = 2$   
 $-4x - 3y = -11$   
 $x - 5y + 4z = 1$

**Solving Quadratics by Factoring - Solve each equation by factoring.**

16)  $x^2 = -5x + 14$

17)  $n^2 + 7 = 8n$

18)  $6b^2 = -11b - 3$

**Solving Quadratics by Completing the Square - Solve each equation by completing the square.**

19)  $v^2 - 12v + 27 = 7$

20)  $4x^2 + 16x - 16 = 4$

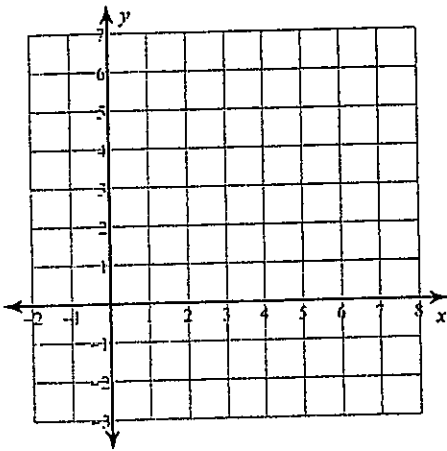
**Solving Quadratics Using the Quadratic Formula - Solve each equation with the quadratic formula.**

21)  $6n^2 = 1 + 9n$

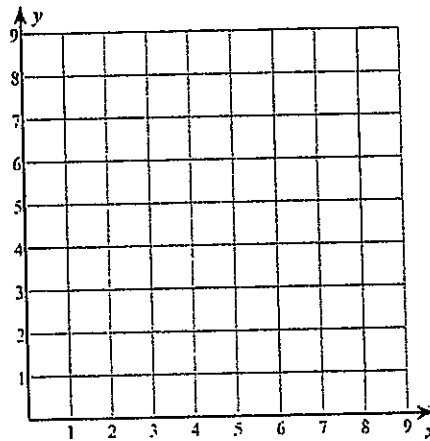
22)  $6a^2 = 27 + 9a$

**Graphing Quadratics - Sketch the graph of each function.**

23)  $y = 2x^2 - 4x$



24)  $y = x^2 - 8x + 20$



**Adding and Subtracting Polynomials - Simplify each expression.**

25)  $(7m^2 + 2m + 4) + (7m^2 - 8m + 4)$

**Multiplying and Dividing Rational Expressions - Simplify each expression.**

$$26) \frac{n^2 - 11n + 24}{n - 3} \cdot \frac{4}{n - 8}$$

$$27) \frac{5}{m^2 + 6m - 7} \div \frac{1}{m + 7}$$

**Adding and Subtracting Rational Expressions - Simplify each expression.**

$$28) \frac{6n}{5n + 1} + \frac{6}{3n - 6}$$

$$29) \frac{3}{2x - 2} - \frac{2}{2x}$$

$$30) \frac{3}{8r^3 - 24r^2} + 5$$

**Multiplying Polynomials - Find each product.**

$$31) (4b + 7)(4b - 7)$$

$$32) (8v - 5)^2$$

**Dividing Polynomials - Divide Using Long Division.**

$$33) (x^3 + 6x^2 + 9x + 11) \div (x + 4)$$

**Dividing Polynomials - Divide Using Synthetic Division.**

$$34) (n^3 - 8n^2 - 15n + 56) \div (n - 9)$$

**Simplifying Rational Expressions - Simplify each and state the excluded values.**

35)  $\frac{a-6}{7a-42}$

36)  $\frac{18v}{42v^2 + 24v}$

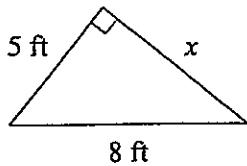
**Solving Rational Equations - Solve each equation. Remember to check for extraneous solutions.**

37)  $\frac{5}{x^2} = \frac{1}{x} - \frac{1}{x^2}$

38)  $\frac{3}{x^2 - x - 2} = \frac{4}{x+1} + \frac{6}{x^2 - x - 2}$

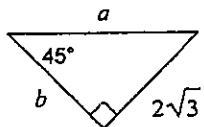
**Pythagorean Theorem - Find the missing side of each triangle. Leave your answers in simplest radical form.**

51)

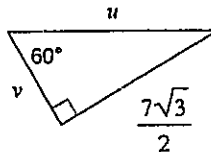


**Special Right Triangles - Find the missing side lengths. Leave your answers as radicals in simplest form.**

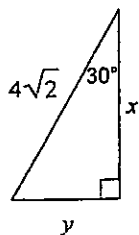
52)



53)

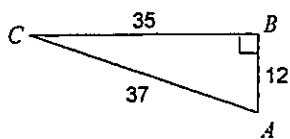


54)

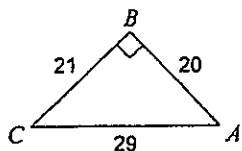


**SOH-CAH-TOA - Find the value of each trigonometric ratio.**

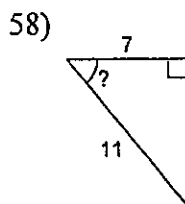
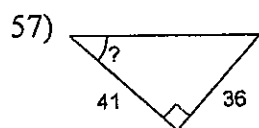
55)  $\cos A$



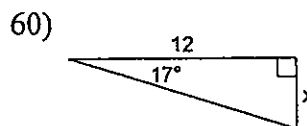
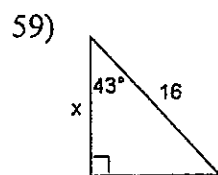
56)  $\tan A$



**SOH-CAH-TOA - Find the measure of the indicated angle to the nearest degree.**



**SOH-CAH-TOA - Find the missing side. Round to the nearest tenth.**





**Simplify. Your answer should contain only positive exponents.**

1)  $2v^{-4} \cdot (u^4 v^{-1})^2$

2)  $\frac{yx^2}{(x^{-1}y^4)^2}$

3)  $3n^{-4} \cdot n^{-3}$

4)  $(4x^2y^2)^4$

5)  $\frac{3yx^3}{4yx^4}$

6)  $\frac{a^2b^2 \cdot a^{-3}b^{-4}}{3ba^3}$

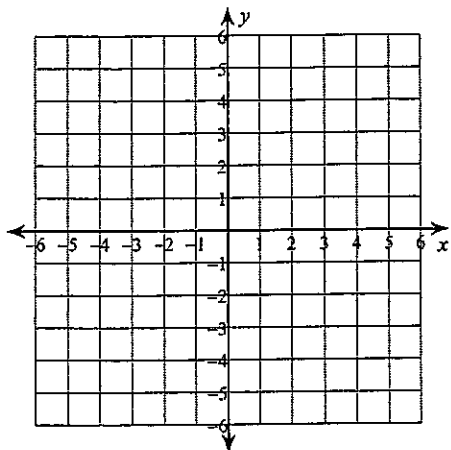
**Solve each equation.**

7)  $|x - 6| = 2$

8)  $3|n - 2| = 21$

Graph each equation.

9)  $y = |x - 1| + 2$

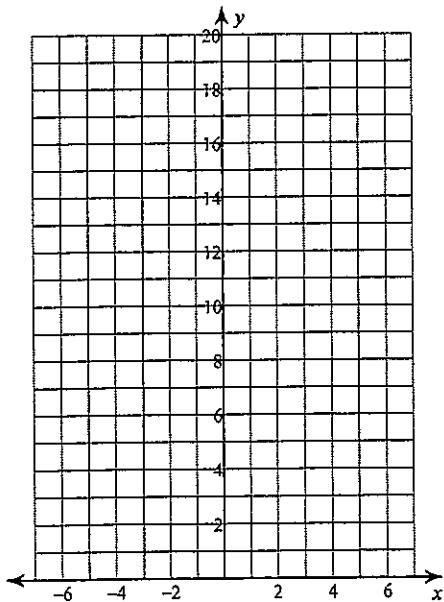


Domain

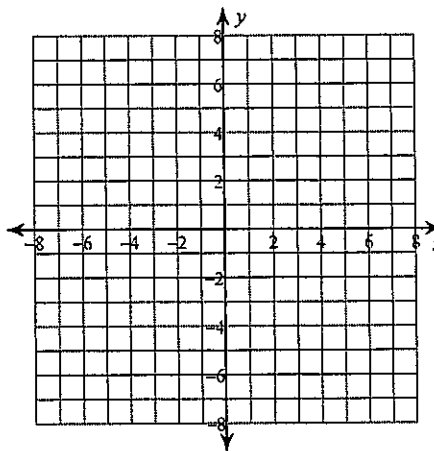
End Behavior

Sketch the graph of each function.

10)  $y = 5 \cdot 2^x + 1$



11)  $y = \log_6(x - 1) + 2$



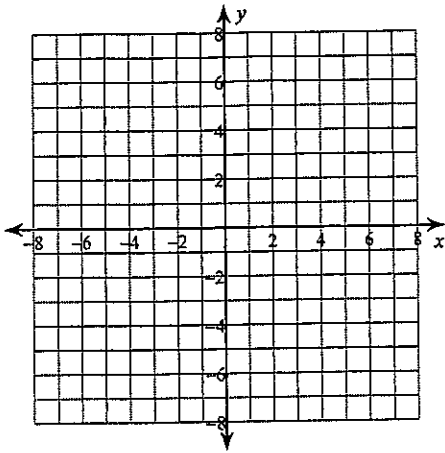
Domain

End Behavior

Domain

End Behavior

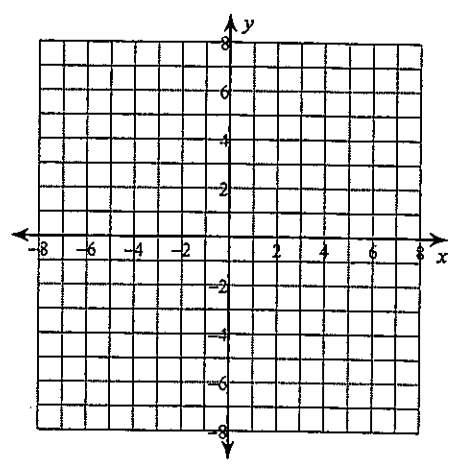
12)  $f(x) = x^3 - 3x^2 + 5$



Domain

End Behavior

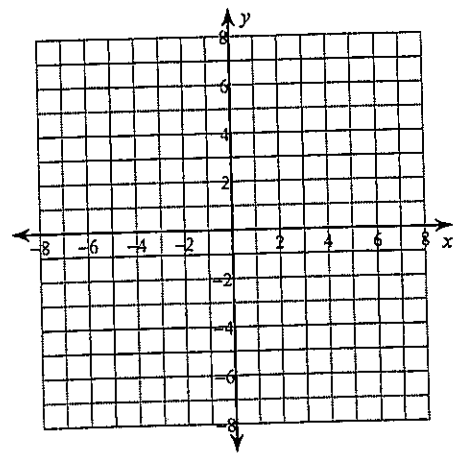
13)  $y = \sqrt{x-4}$



Domain

End Behavior

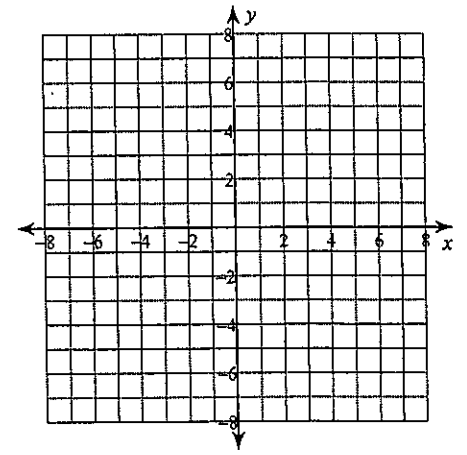
14)  $f(x) = \frac{x+2}{-2x-2}$



Domain

End Behavior

15)  $f(x) = \frac{x^2+x}{-x^2+x+6}$



Domain

End Behavior