TIMOTHY
CHRISTIAN SCHOOL

Entering Honors PreCalculus Packet 2022

Please complete every problem and SHOW ALL WORK. No Work = No Credit. Write your final answers on the answer sheet at the end of the packet. This assignment will be graded for both accuracy on the answer sheet (75%) and for showing work throughout the packet (25%). It is due on the first day you return to school. This packet will count as a test grade in the first marking period of the new school year.

This Packet has been designed to give a review of Algebra 2 and Trigonometry skills that are essential for student success in the Honors PreCalculus course. The packet should be completed over the course of the summer and not in the last week before the new school year begins.

Suggested timeline for completing this packet.

Week of July 4 – Practice Set # 1 & 2

Week of July 11 – Practice Set # 3 & 4

Week of July 18 – Practice Set # 5 & 6

Week of July 25 – Pages 11, 12, 13

Week of August 1 – Practice Set # 7 & 8

Week of August 8 – Practice Set # 9 & 10

Week of August 15 – Practice Set # 11 & 13 (there is no practice set 12)

Week of August 22 – Pages 21 – 24

A. Simplifying Polynomial Expressions

I. Combining Like Terms

- You can add or subtract terms that are considered "like", or terms that have the same variable(s) with the same exponent(s).

Ex. 1: $5x - 7y + 10x + 3y$

$\underline{5x} \underline{- 7y} + \underline{10x} + \underline{3y}$

$15x - 4y$

Ex. 2: $-8h^2 + 10h^3 - 12h^2 - 15h^3$

$\underline{-8h^2} + \underline{10h^3} \underline{- 12h^2} \underline{- 15h^3}$

$-20h^2 - 5h^3$

II. Applying the Distributive Property

- Every term inside the parentheses is multiplied by the term outside of the parentheses.

Ex. 1: $3(9x - 4)$

$3 \cdot 9x - 3 \cdot 4$

$27x - 12$

Ex. 2: $4x^2(5x^3 + 6x)$

$4x^2 \cdot 5x^3 + 4x^2 \cdot 6x$

$20x^5 + 24x^3$

III. Combining Like Terms AND the Distributive Property (Problems with a Mix!)

- Sometimes problems will require you to distribute AND combine like terms!!

Ex. 1: $3(4x - 2) + 13x$

$3 \cdot 4x - 3 \cdot 2 + 13x$

$12x - 6 + 13x$

$25x - 6$

Ex. 2: $3(12x - 5) - 9(-7 + 10x)$

$3 \cdot 12x - 3 \cdot 5 - 9(-7) - 9(10x)$

$36x - 15 + 63 - 90x$

$-54x + 48$

PRACTICE SET 1

Simplify.

1. $8x - 9y + 16x + 12y$

2. $14y + 22 - 15y^2 + 23y$

3. $5n - (3 - 4n)$

4. $-2(11b - 3)$

5. $10q(16x + 11)$

6. $-(5x - 6)$

7. $3(18z - 4w) + 2(10z - 6w)$

8. $(8c + 3) + 12(4c - 10)$

9. $9(6x - 2) - 3(9x^2 - 3)$

10. $-(y - x) + 6(5x + 7)$

B. Solving Equations

I. Solving Two-Step Equations

A couple of hints:

1. To solve an equation, UNDO the order of operations and work in the reverse order.
2. REMEMBER! Addition is "undone" by subtraction, and vice versa. Multiplication is "undone" by division, and vice versa.

$$\begin{aligned} Ex.1:\ 4x-2&=30 \\ +2\quad &+2 \\ 4x&=32 \\ \div 4\quad &\div 4 \\ x&=8 \end{aligned}$$

$$\begin{aligned} Ex.2:\ 87&=-11x+21 \\ -21\quad &\qquad -21 \\ 66&=-11x \\ \div -11\quad &\div -11 \\ -6&=x \end{aligned}$$

II. Solving Multi-step Equations With Variables on Both Sides of the Equal Sign

- When solving equations with variables on both sides of the equal sign, be sure to get all terms with variables on one side and all the terms without variables on the other side.

$$\begin{aligned} Ex.3:\ 8x+4&=4x+28 \\ -4\quad &\quad -4 \\ 8x&=4x+24 \\ -4x\quad &-4x \\ 4x&=24 \\ \div 4\quad &\div 4 \\ x&=6 \end{aligned}$$

III. Solving Equations that need to be simplified first

- In some equations, you will need to combine like terms and/or use the distributive property to simplify each side of the equation, and then begin to solve it.

$$\begin{aligned} Ex.4:\ 5(4x-7)&=8x+45+2x \\ 20x-35&=10x+45 \\ -10x\quad &\quad -10x \\ 10x-35&=45 \\ +35\quad &+35 \\ 10x&=80 \\ \div 10\quad &\div 10 \\ x&=8 \end{aligned}$$

PRACTICE SET 2

Solve each equation. You must show all work.

1. $5x - 2 = 33$
2. $140 = 4x + 36$
3. $8(3x - 4) = 196$
4. $45x - 720 + 15x = 60$
5. $132 = 4(12x - 9)$
6. $198 = 154 + 7x - 68$
7. $-131 = -5(3x - 8) + 6x$
8. $-7x - 10 = 18 + 3x$
9. $12x + 8 - 15 = -2(3x - 82)$
10. $-(12x - 6) = 12x + 6$

PRACTICE SET 3

Solve each equation for the specified variable.

1. $Y + V = W$, for V
2. $9wr = 81$, for w
3. $2d - 3f = 9$, for f
4. $dx + t = 10$, for x
5. $P = (g - 9)180$, for g
6. $4x + y - 5h = 10y + u$, for x

C. Rules of Exponents

Multiplication: Recall $(x^m)(x^n)=x^{m+n}$ *Ex:* $(3x^4y^2)(4xy^5)=(3\cdot 4)(x^4\cdot x^1)(y^2\cdot y^5)=12x^5y^7$

Division: Recall $\frac{x^m}{x^n}=x^{(m-n)}$ *Ex:* $\frac{42m^5j^2}{-3m^3j}=\left(\frac{42}{-3}\right)\left(\frac{m^5}{m^3}\right)\left(\frac{j^2}{j^1}\right)=-14m^2j$

Powers: Recall $(x^m)^n=x^{(mn)}$ *Ex:* $(-2a^3bc^4)^3=(-2)^3(a^3)^3(b^1)^3(c^4)^3=-8a^9b^3c^{12}$

Power of Zero: Recall $x^0=1,\ x\neq 0$ *Ex:* $5x^0y^4=(5)(1)(y^4)=5y^4$

PRACTICE SET 4

Simplify each expression.

1. $(c^5)(c)(c^2)$
2. $\frac{m^{15}}{m^5}$
3. $(k^4)^5$
4. d^5
5. $(p^4q^2)(p^7q^5)$
6. $\frac{45y^5z^{10}}{5y^3z}$
7. $(-t^7)^3$
8. $3f^3g^0$
9. $(4h^5k^3)(15k^2h^3)$
10. $\frac{12a^4b^6}{36ab^2c}$
11. $(3m^2n)^4$
12. $(12x^2y)^0$
13. $(-5a^2b)(2ab^2c)(-3b)$
14. $4x(2x^2y)^0$
15. $(3x^4y)(2y^2)^5$

D. Binomial Multiplication

I. Reviewing the Distributive Property

The distributive property is used when you want to multiply a single term by an expression.

Ex 1: $8(5x^2 - 9x)$

$8 \cdot 5x^2 + 8 \cdot (-9x)$

$40x^2 - 72x$

II. Multiplying Binomials – the FOIL method

When multiplying two binomials (an expression with <u>two</u> terms), we use the "FOIL" method. The "FOIL" method uses the distributive property <u>twice</u>!

FOIL is the order in which you will multiply your terms.

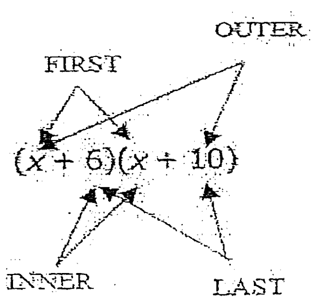
First

Outer

Inner

Last

Ex. 1: $(x + 6)(x + 10)$



First	$x \cdot x \longrightarrow x^2$
Outer	$x \cdot 10 \longrightarrow 10x$
Inner	$6 \cdot x \longrightarrow 6x$
Last	$6 \cdot 10 \longrightarrow 60$

$x^2 + 10x + 6x + 60$

$x^2 + 16x + 60$
(After combining like terms)

Recall: $4^2 = 4 \cdot 4$

$x^2 = x \cdot x$

Ex. $(x+5)^2$

$(x+5)^2 = (x+5)(x+5)$

Now you can use the "FOIL" method to get a simplified expression.

PRACTICE SET 5

Multiply. Write your answer in simplest form.

1. $(x+10)(x-9)$
2. $(x+7)(x-12)$
3. $(x-10)(x-2)$
4. $(x-8)(x+81)$
5. $(2x-1)(4x+3)$
6. $(-2x+10)(-9x+5)$
7. $(-3x-4)(2x+4)$
8. $(x+10)^2$
9. $(-x+5)^2$
10. $(2x-3)^2$

E. Factoring

I. Using the Greatest Common Factor (GCF) to Factor.

- Always determine whether there is a greatest common factor (GCF) first.

Ex 1 $3x^4 - 33x^3 + 90x^2$

- In this example the GCF is $3x^2$.
- So when we factor, we have $3x^2(x^2 - 11x + 30)$.
- Now we need to look at the polynomial remaining in the parentheses. Can this trinomial be factored into two binomials? In order to determine this make a list of all of the factors of 30.

30		30	
1	30	-1	-30
2	15	-2	-15
3	10	-3	-10
5	6	-5	-6

Since $-5 + -6 = -11$ and $(-5)(-6) = 30$ we should choose -5 and -6 in order to factor the expression.

- The expression factors into $3x^2(x-5)(x-6)$

Note: Not all expressions will have a GCF. If a trinomial expression does not have a GCF, proceed by trying to factor the trinomial into two binomials.

II. Applying the difference of squares: $a^2 - b^2 = (a-b)(a+b)$

Ex. 2 $4x^3 - 100x$

$4x(x^2 - 25)$

$4x(x-5)(x+5)$

Since x^2 and 25 are perfect squares separated by a subtraction sign, you can apply the difference of two squares formula.

PRACTICE SET 6

Factor each expression.

1. $3x^2 + 6x$

2. $4a^2b^2 - 16ab^3 + 8ab^2c$

3. $x^2 - 25$

4. $n^2 + 8n + 15$

5. $g^2 - 9g + 20$

6. $d^2 + 3d - 28$

7. $z^2 - 7z - 30$

8. $m^2 + 18m + 81$

9. $4y^3 - 36y$

10. $5k^2 + 30k - 135$

Solving quadratic functions by factoring or quadratic formula

Solve the equation $ax^2 + bx + c = 0$ to find the roots of the equation.

Find the roots of $x^2 + 2x - 15 = 0$ to find the zeros of $f(x) = x^2 + 2x - 15$.

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

$$(x + 5)(x - 3) = 0$$

Factor, then multiply to check.

$$(x + 5) = 0 \text{ or } (x - 3) = 0$$

Set each factor equal to 0.

$$x = -5 \text{ or } x = 3$$

Solve each equation for x.

To check the roots, substitute each root into the original equation:

Equation:	$x^2 + 2x - 15 = 0$	$x^2 + 2x - 15 = 0$
Root:	$x = -5$	$x = 3$
Check:	$(-5)^2 + 2(-5) - 15$	$(3)^2 + 2(3) - 15$
	$25 - 10 - 15 = 0$ ✓	$9 + 6 - 15 = 0$ ✓

The roots of $x^2 + 2x - 15 = 0$ are -5 and 3.

The zeros of $f(x) = x^2 + 2x - 15$ are -5 and 3.

The roots of the equation are the zeros of the function.

Find the roots of each by factoring.

1. $x^2 - 7x - 8 = 0$

2. $x^2 - 5x + 6 = 0$

3. $x^2 = 144$

4. $x^2 - 21x = 0$

5. $4x^2 - 16x + 16 = 0$

6. $2x^2 + 8x + 6 = 0$

7. $x^2 + 14x = 32$

8. $9x^2 + 6x + 1 = 0$

The Quadratic Formula is another way to find the roots of a quadratic equation or the zeros of a quadratic function.

Find the zeros of $f(x) = x^2 - 6x - 11$.

Step 1 Set $f(x) = 0$. $\quad x^2 - 6x - 11 = 0$

Step 2 Write the Quadratic Formula. $\quad x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

Step 3 Substitute values for a, b, and c into the Quadratic Formula.

$a = 1$, $b = -6$, $c = -11$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-(-6) \pm \sqrt{(-6)^2 - 4(1)(-11)}}{2(1)}$$

Step 4 Simplify.

$$x = \frac{-(-6) \pm \sqrt{(-6)^2 - 4(1)(-11)}}{2(1)} = \frac{6 \pm \sqrt{36 + 44}}{2} = \frac{6 \pm \sqrt{80}}{2}$$

Step 5 Write in simplest form.

$$x = \frac{6 \pm \sqrt{80}}{2} = 3 \pm \frac{\sqrt{80}}{2} = 3 \pm \frac{\sqrt{(16)(5)}}{2} = 3 \pm \frac{4\sqrt{5}}{2} = 3 \pm 2\sqrt{5}$$

> Remember to divide both terms of the numerator by 2 to simplify.

Find the zeros of each function by using the quadratic formula.

1. $x^2 - 3x - 8 = 0$

2. $(x - 5)^2 + 12 = 0$

3. $2x^2 - 10x + 18 = 0$

4. $x^2 + 3x + 3 = 0$

5. $x^2 - 5x + 10 = 0$

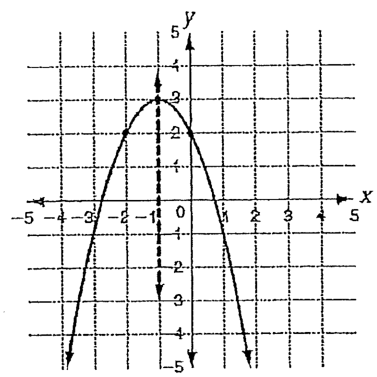
Properties of Quadratic Functions in Standard Form

You can use the properties of a parabola to graph a quadratic function in standard form: $f(x) = ax^2 + bx + c$, $a \neq 0$.

Property	Example: $f(x) = -x^2 - 2x + 2$
$a > 0$: opens upward $a < 0$: opens downward	$a = -1$, $b = -2$, $c = 2$ $a < 0$, so parabola opens downward.
Axis of symmetry: $x = -\frac{b}{2a}$	Axis of symmetry: $x = -\frac{b}{2a} = -\frac{(-2)}{2(-1)} = -1$
Vertex: $\left(-\frac{b}{2a}, f\left(-\frac{b}{2a}\right)\right)$	$f\left(-\frac{b}{2a}\right) = f(-1) = -1(-1)^2 - 2(-1) + 2 = 3$ Vertex: $(-1, 3)$
y-intercept: c	y-intercept is 2, so $(0, 2)$ is a point on the graph.

To graph $f(x) = -x^2 - 2x + 2$:

1. Plot vertex.
2. Sketch axis of symmetry through vertex.
3. Plot y-intercept.
4. Use symmetry to plot $(-2, 2)$.
5. Sketch graph.



For each function, a) determine whether the graph opens upward or downward, b) find the axis of symmetry, c) find the vertex, d)find the y-intercept.

1. $f(x) = x^2 - 4x + 3$

2. $g(x) = x^2 + 2x + 3$

3. $f(x) = x^2 - 3x$

4. $f(x) = \frac{1}{2}x^2 - 2x + 4$

Find the minimum or maximum value of each function.

1. $x^2 + 2x + 6$

2. $-2x^2 - 8x + 10$

F. Radicals

To simplify a radical, we need to find the greatest perfect square factor of the number under the radical sign (the radicand) and then take the square root of that number.

Ex. 1: $\sqrt{72}$

$\sqrt{36}\cdot\sqrt{2}$

$6\sqrt{2}$

Ex. 2: $4\sqrt{90}$

$4\cdot\sqrt{9}\cdot\sqrt{10}$

$4\cdot 3\cdot\sqrt{10}$

$12\sqrt{10}$

Ex. 3: $\sqrt{48}$

$\sqrt{16}\sqrt{3}$

$4\sqrt{3}$

OR

Ex. 3: $\sqrt{48}$

$\sqrt{4}\sqrt{12}$

$2\sqrt{12}$ ← This is not simplified completely because 12 is divisible by 4 (another perfect square)

$2\sqrt{4}\sqrt{3}$

$2\cdot 2\cdot\sqrt{3}$

$4\sqrt{3}$

PRACTICE SET 7

Simplify each radical.

1. $\sqrt{121}$
2. $\sqrt{90}$
3. $\sqrt{175}$
4. $\sqrt{288}$
5. $\sqrt{486}$
6. $2\sqrt{16}$
7. $6\sqrt{500}$
8. $3\sqrt{147}$
9. $8\sqrt{475}$
10. $\sqrt{\frac{125}{9}}$

G. Graphing Lines

I. Finding the Slope of the Line that Contains each Pair of Points.

Given two points with coordinates (x_1, y_1) and (x_2, y_2), the formula for the slope, m, of the line containing the points is $m = \dfrac{y_2 - y_1}{x_2 - x_1}$.

Ex. (2, 5) and (4, 1)

$$m = \frac{1-5}{4-2} = \frac{-4}{2} = -2$$

The slope is -2.

Ex. (-3, 2) and (2, 3)

$$m = \frac{3-2}{2-(-3)} = \frac{1}{5}$$

The slope is $\frac{1}{5}$

<u>PRACTICE SET 8</u>

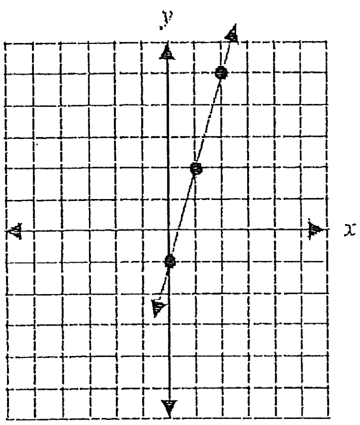
1. (-1, 4) and (1, -2)
2. (3, 5) and (-3, 1)
3. (1, -3) and (-1, -2)
4. (2, -4) and (6, -4)
5. (2, 1) and (-2, -3)
6. (5, -2) and (5, 7)

II. Using the Slope – Intercept Form of the Equation of a Line.

The slope-intercept form for the equation of a line with slope m and y-intercept b is $y = mx + b$.

Ex. $y = 3x - 1$

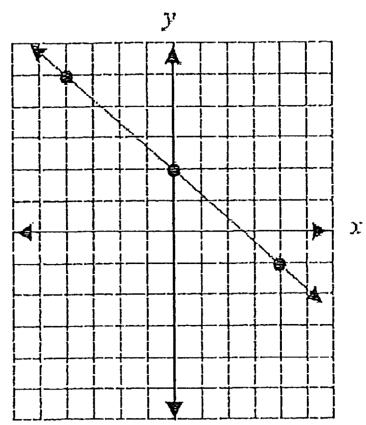
Slope: 3 y-intercept: -1



Place a point on the y-axis at -1. Slope is 3 or 3/1, so travel up 3 on the y-axis and over 1 to the right.

Ex. $y = -\frac{3}{4}x + 2$

Slope: $-\frac{3}{4}$ y-intercept: 2

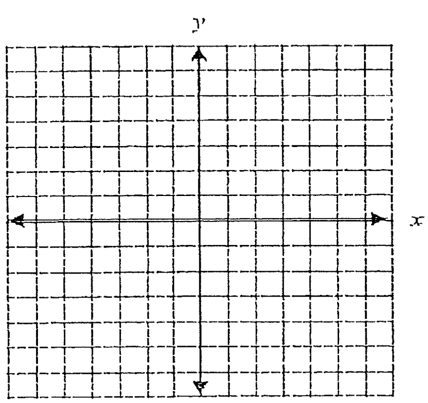


Place a point on the y-axis at 2. Slope is -3/4 so travel down 3 on the y-axis and over 4 to the right. Or travel up 3 on the y-axis and over 4 to the left.

PRACTICE SET 9

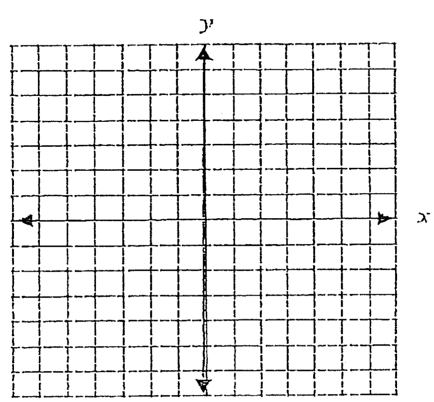
1. $y = 2x + 5$

Slope: _____ y-intercept: _____



2. $y = \frac{1}{2}x - 3$

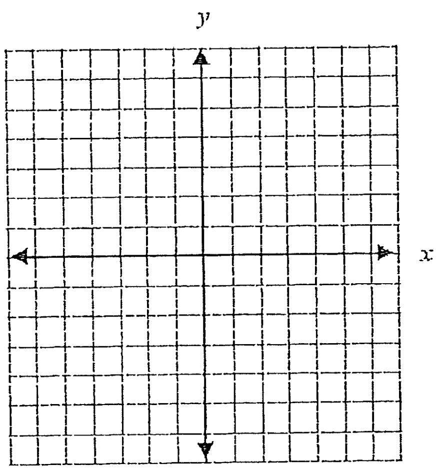
Slope: _____ y-intercept: _____



3. $y = -\frac{2}{5}x + 4$

Slope: ______________

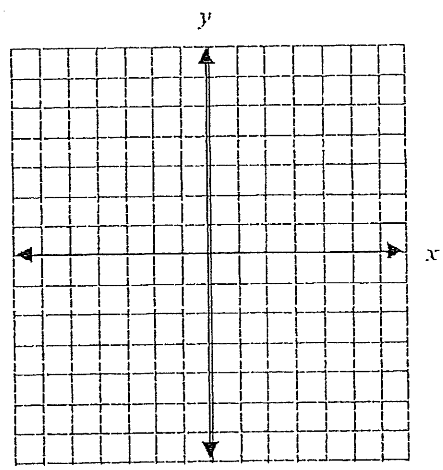
y-intercept: ______________



4. $y = -3x$

Slope: ______________

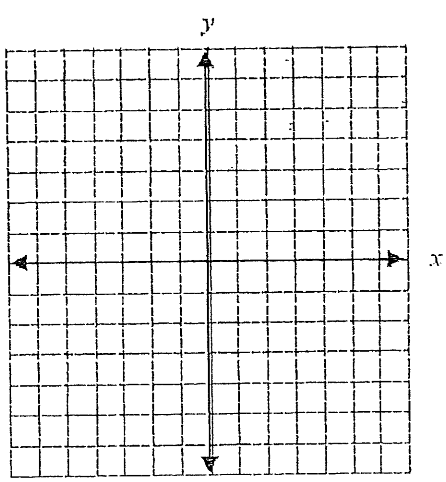
y-intercept ______________



5. $y = -x + 2$

Slope: ______________

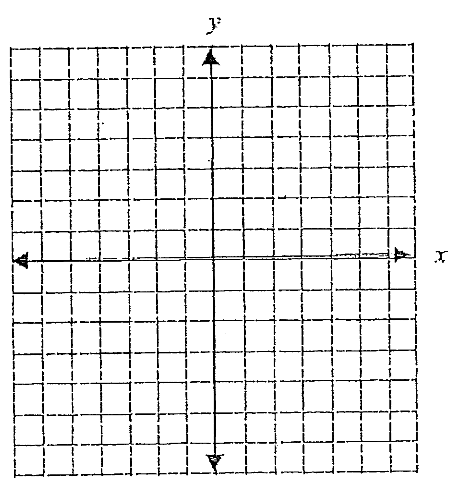
y-intercept: ______________



6. $y = x$

Slope: ______________

y-intercept ______________



Solving Systems of Equations

To solve a system of equations, you can use either the substitution method or the elimination method.

EXAMPLE Solve the following system of equations. $\begin{cases} 3x + 2y = 0 \\ 2x + y = 3 \end{cases}$

Method 1 Use substitution.

$y = -2x + 3$	*Solve the second equation for y.*
$3x + 2(-2x + 3) = 0$	*Substitute $-2x + 3$ for y into the first equation.*
$3x - 4x + 6 = 0$	*Distribute 2.*
$-x + 6 = 0$	*Simplify.*
$6 = x$	*Solve for x.*
$y = -2(6) + 3$	*Substitute 6 for x into the second equation and simplify.*
$= -9$	*Simplify.*
$(6, -9)$	*Write the solution as an ordered pair.*

Method 2 Use elimination.

$-2(2x + y) = -2(3)$	*Multiply each term in the second equation by −2 to get opposite y-coefficients.*
$-4x - 2y = -6$	*Simplify.*
$3x + 2y = 0$ $-4x - 2y = -6$	*Write the system using the new equation so that like terms are aligned.*
$-x = -6$	*Add like terms on both sides of the equations.*
$x = 6$	*Solve for x.*
$y = -2(6) + 3$	*Substitute 6 for x into the second equation and simplify.*
$= -9$	*Simplify.*
$(6, -9)$	*Write the solution as an ordered pair.*

PRACTICE

Solve each system of equations.

1. $\begin{cases} x - y = 0 \\ x + y = 2 \end{cases}$

2. $\begin{cases} 3x + y = 1 \\ x + y = -3 \end{cases}$

3. $\begin{cases} 3x - 3y = 4 \\ x + y = \frac{10}{3} \end{cases}$

4. $\begin{cases} \frac{x + y}{3} = 1 \\ 2x - 3y = 2 \end{cases}$

5. $\begin{cases} 4x - 6y = 1 \\ 3y - x = 2 \end{cases}$

6. $\begin{cases} x - y = 0 \\ 2x + 3y = 0 \end{cases}$

7. $\begin{cases} 3x - y = 6 \\ y = 2x + 3 \end{cases}$

8. $\begin{cases} 2x + 5y = 14 \\ y = 5 \end{cases}$

9. $\begin{cases} -3x + 2y = 31 \\ x = 0.5y + 6 \end{cases}$

10. $\begin{cases} 3x + y = 4 \\ x - 2y = 5 \end{cases}$

Solving Radical Equations

A radical equation is an equation that has a variable within a radical, such as a square root. To solve a square-root equation, square both sides and solve the resulting equation.

EXAMPLE Solve the equation $\sqrt{x-9}=1$. Check your answer.

$\left(\sqrt{x-9}\right)^2=(1)^2$ *Square both sides.*

$x-9=1$ *Simplify.*

$x=10$ *Solve for x.*

Check $\sqrt{10-9}=\sqrt{1}=1$ ✓

PRACTICE

Solve each equation. Check your answer.

1. $\sqrt{x+1}=4$
2. $\sqrt{2x-1}=5$
3. $\sqrt{1-x}=3$
4. $\sqrt{-6-5x}=2$
5. $\sqrt{7+x}=0$
6. $\sqrt{4x+4}=2$
7. $\sqrt{3-2x}=3$
8. $\sqrt{60-2x}=8$

Practice Set #13

1. *What is the quadratric formula?* ______________________

2. *What is the vertex formula?* ______________________

3. *Solve for h:* $V = \pi r^2 h$

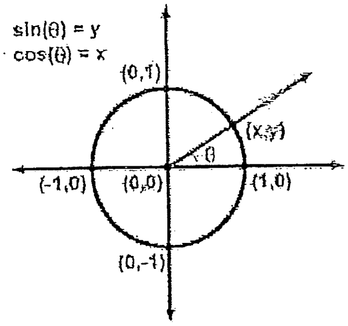
4. *Solve for u:* $u^2 - d = 1$

5. *Suppose you invest \$12,000 in two funds paying 10.5% and 13% simple interest. Where the formula for simple interest is* $I = Prt$ (P = *principal amount,* r = *rate,* t = *time in years*). *If the investemnt in the first fund is for 12 years and the investment in the second fund is for 9 years, which investment has a better return value?*

6. *The dollar value of a product in 2011 is \$1430. The value of the product is expected to increase \$83 per year for the next five years. Write a linear equation that gives the dollar value V of the product in terms of year t.*

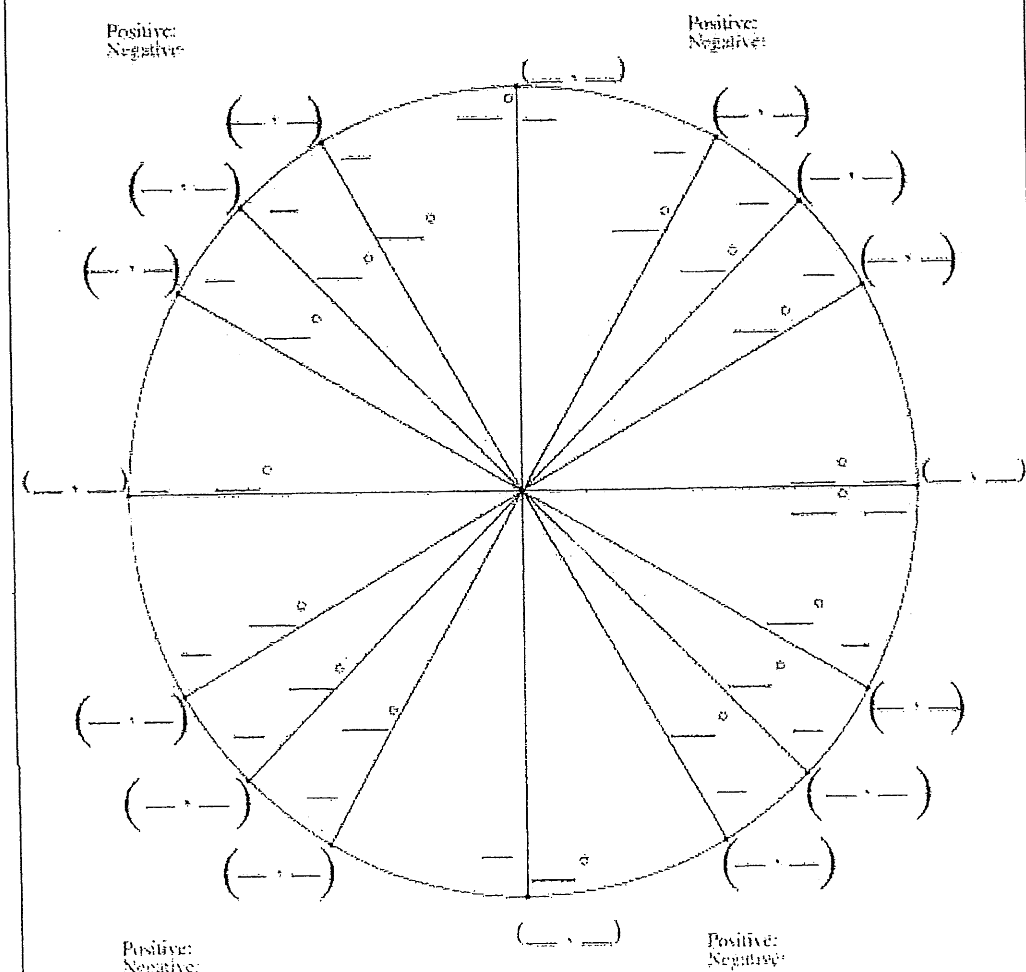
7. *During the first and second quarters of a year a business has sales of \$150,000 and \$185,000, respectively. If the growth follows a linear pattern, what will the sales be during the fourth quarter?*

8. *If 3 pencils and 2 notepads cost \$1.30 while 5 pencils and 1 notepad cost \$1.00, what would be the cost of each pencil and each notepad?*



θ	0	$\frac{\pi}{6}$	$\frac{\pi}{4}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$
	0	$30°$	$45°$	$60°$	$90°$
$\sin(\theta)$	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1
$\cos(\theta)$	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0
$\tan(\theta)$	0	$\frac{\sqrt{3}}{3}$	1	$\sqrt{3}$	U
$\csc(\theta)$	U	2	$\sqrt{2}$	$\frac{2}{\sqrt{3}}$	1
$\sec(\theta)$	1	$\frac{2}{\sqrt{3}}$	$\sqrt{2}$	2	U
$\cot(\theta)$	U	$\sqrt{3}$	1	$\frac{\sqrt{3}}{3}$	0

Fill in The Unit Circle



Right Triangle Trigonometry

A **trigonometric ratio** compares the lengths of two sides of a right triangle. The values of the ratios depend upon one of the acute angles of the triangle, denoted by θ.

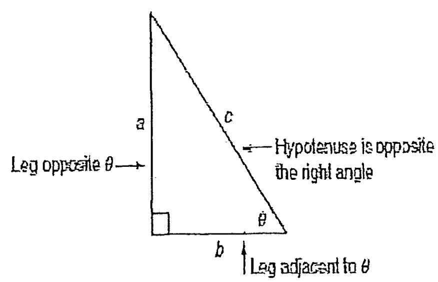
> Sine is Opposite over Hypotenuse,
> Cosine is Adjacent over Hypotenuse,
> Tangent is Opposite over Adjacent.

Use **SOHCAHTOA** to remember the relationships between the sides of a right triangle that correspond to the trigonometric ratios sine, cosine, and tangent.

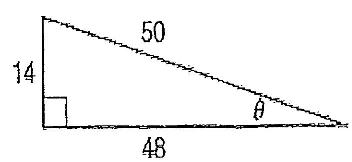
$$\sin\theta = \frac{\text{Opposite}}{\text{Hypotenuse}} = \frac{a}{c}$$

$$\cos\theta = \frac{\text{Adjacent}}{\text{Hypotenuse}} = \frac{b}{c}$$

$$\tan\theta = \frac{\text{Opposite}}{\text{Adjacent}} = \frac{a}{b}$$



Use the definitions of each ratio and the corresponding values from a given right triangle to find the values of the trigonometric functions for θ.



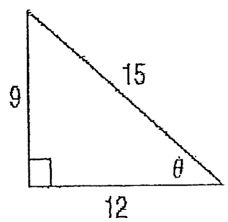
$$\sin\theta = \frac{\text{Opposite}}{\text{Hypotenuse}} = \frac{14}{50} = \frac{7}{25}$$

$$\cos\theta = \frac{\text{Adjacent}}{\text{Hypotenuse}} = \frac{48}{50} = \frac{24}{25}$$

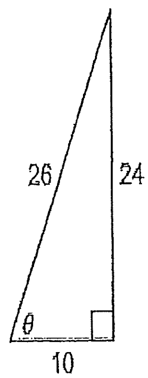
$$\tan\theta = \frac{\text{Opposite}}{\text{Adjacent}} = \frac{14}{48} = \frac{7}{24}$$

Find the value of the sine, cosine, and tangent functions for θ.

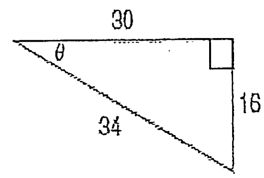
1.



2.



3.



$\sin\theta = \dfrac{\text{Opposite}}{\text{Hypotenuse}} =$ ____________

$\cos\theta = \dfrac{\text{Adjacent}}{\text{Hypotenuse}} =$ ____________

$\tan\theta = \dfrac{\text{Opposite}}{\text{Adjacent}} =$ ____________

$\sin\theta =$ ____________

$\cos\theta =$ ____________

$\tan\theta =$ ____________

$\sin\theta =$ ____________

$\cos\theta =$ ____________

$\tan\theta =$ ____________