Winter Springs High School Summer Review for Trigonometry/Analysis of Functions Honors

Dear Student and Parent,

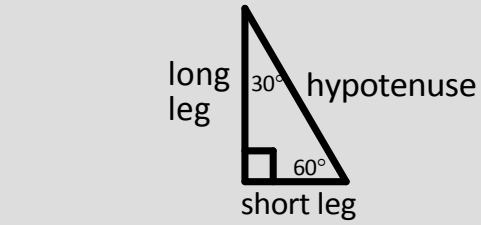
The following assignment are the basic skills needed for success in Trigonometry and Analysis of Functions. If you do not remember how to do some of the problems, search the boldfaced topic on the internet and you will find multiple sites that will re-teach them to you. It is suggested that you work on these problems one to two weeks prior to the school year in order to refresh your memory and to get you into "math" mode.

Make sure you show all work on a **separate sheet of paper.** At Winter Springs High School, the work is more important than the answer.

We look forward to a wonderful and successful school year!
The Mathematics Department at Winter Springs

Trigonometry (1st Semester)

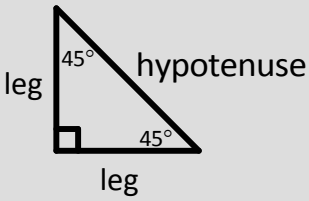
Special Right Triangles



$$\text{short leg} = \frac{1}{2} \cdot \text{hypotenuse}$$

$$\text{long leg} = \sqrt{3} \cdot (\text{short leg})$$

$$\text{hypotenuse} = 2 \cdot (\text{short leg})$$

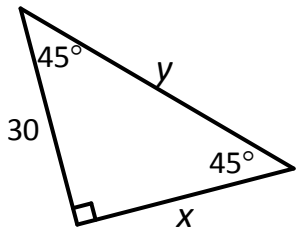


legs are equal

$$\text{hypotenuse} = \sqrt{2} \cdot (\text{leg})$$

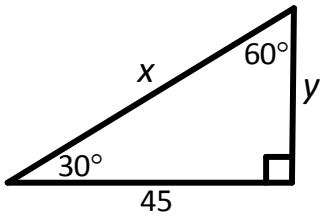
Find the values of *x* and *y* in each of the following triangles. Leave your answer in simplest radical form.

1.



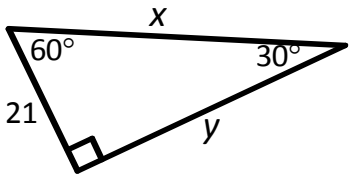
x = _____ y = _____

2.



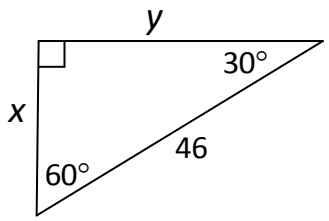
x = _____ y = _____

3.



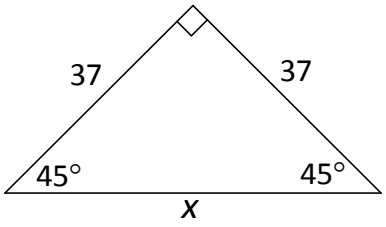
x = _____ y = _____

4.



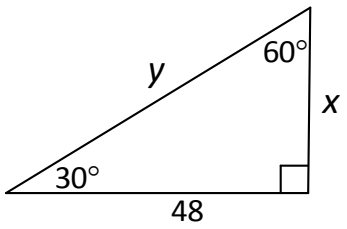
$x =$ _____ $y =$ _____

5.



$x =$ _____

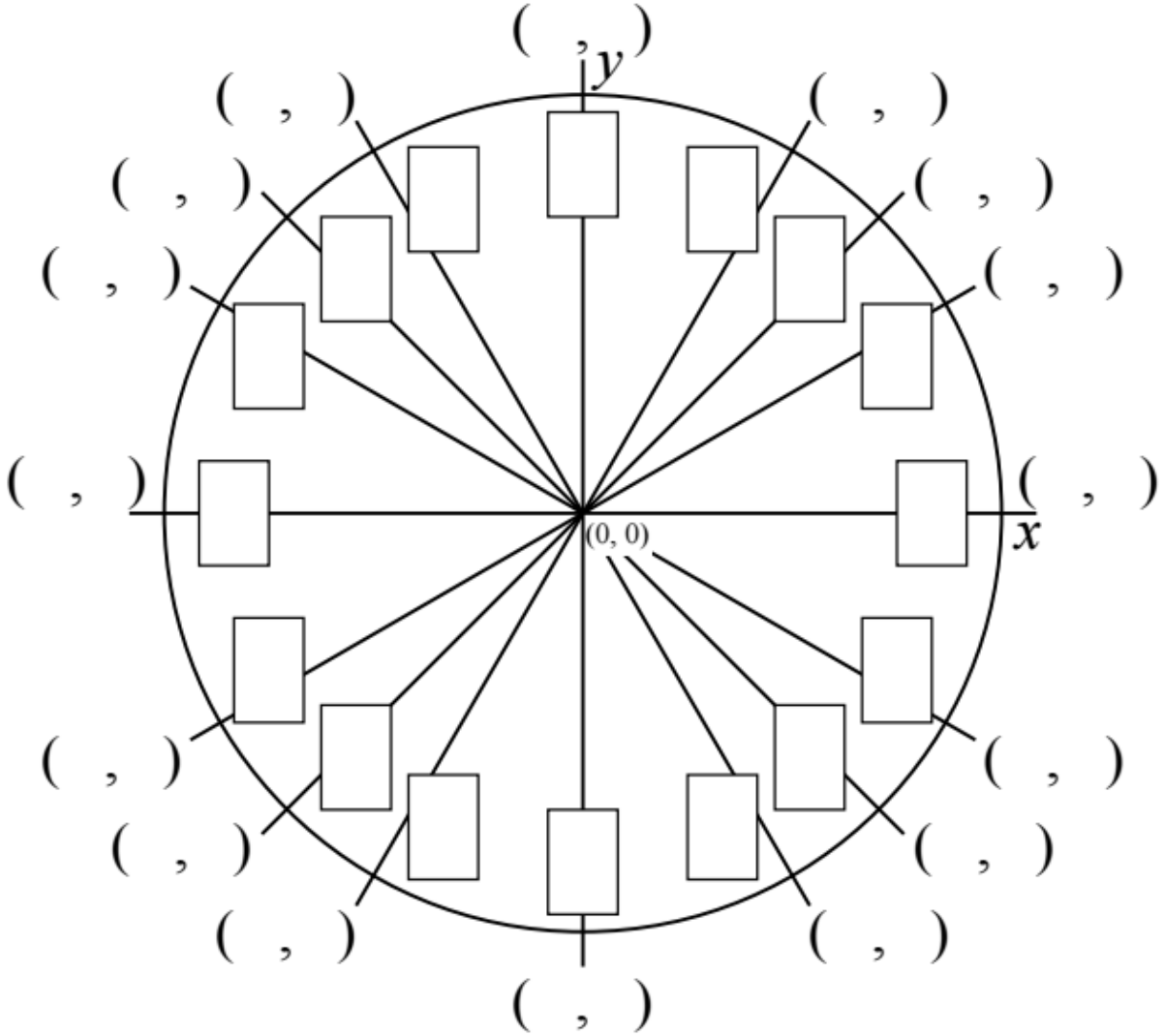
6.



$x =$ _____ $y =$ _____

THE UNIT CIRCLE

1. Label all angles in radians.
2. Fill in all coordinates.



Analysis of Functions (2nd Semester):

Equations
Solve the following:

1. $12m - 6 + 6m = 3$

2. $9 - \frac{2m}{5} = 7$

Solve for y:

3. $12y + 3x - 15 = 5y$

4. $6xy - 5 = -5xy + 18$

Slopes / Equations of Lines
State the slope and y-intercept of each line with the given equation and graph:

5. $4x + 3y = 7 - 6y$

6. $y = -3$

Find the slope-intercept form and point slope form of the equation of the line described:

7. A line passing through (-1, 7) and (12, 5).

8. A line passing through the point (-5, 8) and perpendicular to the line passing through the points (8, 7) and (2, 0).

Systems of Equations

Solve the systems of equations:

9. $\begin{cases} y = 11 + 3x \\ 5x - 2y = -16 \end{cases}$

Exponents
Simplify:

10. $\left(-\frac{4}{3}\right)^3$

11. $\left(\frac{3}{4}\right)^{-3}$

12. $(27)^{\frac{1}{3}}$

13. $(16)^{\frac{1}{2}}$

Simplify:

14. $(x - 5)(x^2 - 3x - 9)$

15. $(x - 5)(x^2 - 3x - 9)$

Factoring
Factor each polynomial completely:

16. $n^2 + n - 42$

17. $3x^2 + 8x + 4$

18. $a^3 - 8$

Solve by factoring:

19. $4z^2 + 12z = 0$

20. $y^2 + 8y = -16$

21. $x^2 - 25 = 0$

Radicals
Simplify:

22. $\sqrt{162}$

23. $\left(-3\sqrt{5}\right)^2$

24. $\sqrt[3]{27^2}$

25. $\sqrt{\frac{6}{8}}$