

Nazareth Academy High School
Honors Trigonometry/Pre-Calculus
Summer Assignment

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Honors Trigonometry/Pre-Calculus is a culmination of Algebra and Geometry topics, which gives basis for applications in Calculus. In order to ensure success in this course, there is a mandatory summer assignment packet.

Most topics should be a review. You should not only be familiar with the topics but should know them well enough to be tested on them.

On the first day of class, you should have your summer assignment with you. We will discuss a due date of this completed packet on the first day of the class. All work and answers should be completed neatly on loose-leaf. No work, no credit. Please circle or box your final answers.

If you have any questions during the summer, please email me.

This course is a challenging course and we will work together to properly prepare you for success in calculus. You should be willing to work to the best of your ability. Success in this course will be a result of your desire to work hard, both in class and independently.

Have great summer!

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ALL work is to be done NEATLY on loose-leaf. Circle or Box final answers. Show all work for each problem otherwise credit will not be given.

1. Evaluate the expression for the given value of x .

a. $-x^2 + x - 1$ $x = 2$

b. $-x^2 + x - 1$ $x = -2$

2. Simplify each expression.

a. $\frac{4^2u^3v^{-4}}{8u^{-2}v}$

b. $\frac{2^{-4}r^{-1}s^{-3}}{4^{-2}rs^{-3}}$

3. Use the properties of radicals to simplify the expression.

a. $\sqrt{18u}\sqrt{2u}$

b. $\frac{\sqrt[3]{32n^4}}{\sqrt[3]{4n}}$

4. Simplify each expression.

a. $\sqrt{50} - \sqrt{18}$

b. $2\sqrt{32} + 3\sqrt{72}$

5. Rewrite the expression by rationalizing the denominator.

a. $\frac{1}{3-\sqrt{2}}$

b. $\frac{2}{\sqrt{5}+4}$

6. Simplify the expression.

a. $(64)^{-2/3}$

b. $(3x^{2/5})(2x^{1/2})$

7. Simplify.

a. $8y - [2y^2 - (3y - 8)]$

b. $\left(x + \frac{1}{x}\right)(x - 3)$

8. Find the product.

a. $(4x - 3)^2$

b. $(3\sqrt{2} + 5)(3\sqrt{2} - 5)$

9. Factor completely.

- a. $x^5 - x$
- b. $x(x - 5) + 4(x - 5)$
- c. $25x^2 - 81$
- d. $x^2 - 12x + 36$
- e. $x^3 - 125$
- f. $8x^3 + 27$
- g. $2x^2 + 21x + 10$
- h. $x^3 - x^2 + 2x - 2$

10. State the domain of the expression.

- a. $\frac{1}{x-6}$
- b. $\sqrt{x+3}$
- c. $\frac{1}{\sqrt{x}}$

11. Write the rational expression in simplest form: $\frac{x^2-36}{5(4x-24)}$

12. Perform the operation and simplify.

- a. $\frac{x^2-4}{x^4-2x^2-8} \cdot \frac{x^2+2}{x^2}$
- b. $\frac{4x-6}{(x-1)^2} \div \frac{2x^2-3x}{x^2+2x-3}$
- c. $2x + \frac{3}{2(x-4)}$
- d. $\frac{1}{x} - \frac{x-1}{x^2+1}$

13. Simplify the complex fraction.

- a. $\frac{\left(\frac{1}{2x-3} - \frac{1}{2x+3}\right)}{\left(\frac{1}{2x} - \frac{1}{2x+3}\right)}$
- b. $\frac{\left(\frac{2}{x} - 3\right)}{\left(1 - \frac{1}{x-1}\right)}$

14. Solve the equation.

- a. $(x+4)^2 = 18$
- b. $-2x^2 - 5x + 27 = 0$
- c. $5x^4 - 12x^3 = 0$
- d. $x^4 - 5x^2 + 6 = 0$

e. $\sqrt{3x-2} = 4-x$

f. $|x-2| = 10$

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

h. $3 = 2 + \frac{2}{z+2}$

15. Solve the inequality.

a. $9x - 8 \leq 7x + 16$

b. $-19 < 3x - 17 \leq 34$

c. $|x+4| < 1$

16. Use inequality notation to describe the set.

a. q is nonnegative.

b. y is at most 45.

c. T is at least 11 and at most 34.

d. k is less than 7 but no less than -2 .

e. The weight of a dog, W , is no more than 75 pounds.