

Honors Pre Calculus Summer Assignment

Hey everyone,

I hope your summer is going well! It is always good to stay practiced in the variety of subjects you take throughout the year. I am taking a different approach to my summer assignment this year, where I want you to tell me about different topics through your own words, then provide examples. Teaching someone else content is one of the best ways to learn, so we are doing that just in a different way.

The following questions are meant to be answered in your own words. Along with that you will provide examples either worked out analytically or through visual examples using graphs. Please be descriptive, creative, and use this to do examples you may be interested in.

1. What is the slope of a line? Show an example of finding the slope between two points.
2. What are the different types of slope?
3. What is an asymptote? Show an example with a graph.
4. What are the formulas for slope-intercept form, point-slope form, and standard form of a line? Please show an example of each with at least one graph that is related.
5. What is the difference between a parallel and perpendicular line? Show this on a graph and describe in your own words.
6. Function Notation is something that we use throughout all of mathematics. Please create a function and then find different values of x . What is the difference between a dependent and independent variable?
7. What is a composition of functions? Develop some examples.
8. Define Domain and Range.
9. Describe what it means to be increasing, decreasing, and constant on a graph. What is a real world example of this?
10. Look up the difference quotient and do your best to describe what it means to find the secant line.
11. There are several different transformations of graphs. Describe the different transformations, then show an example with a graph of each. Afterwards make an example with multiple transformations and show its graph.
12. What are parent (basic) functions? Show graphs of each function you find.
13. How do you determine if a graph is even, odd, or neither? Show an example of each. Is there a graphical difference that you can use to determine each?

There are many different resources to use over the summer to learn about these topics. All of these topics should be reviewed, but I want to make sure you have a good foundation heading into the school year. Look at resources like [Khan Academy](#), [PurpleMath](#), [Paul's Notes](#), or something else you may prefer to assist. If you need to ask questions please feel free to send me an email at swalker@clarksvilleacademy.com.

-Coach Walker