

Honor's Pre-Calculus Summer Assignment

Directions: This assignment is optional. If you choose to do this assignment then it will be used as extra bonus points on the first test. In order to receive the extra bonus points, then all of the assignment must be complete, correct, and ready to turn in on the day of the 1st test. It is worth 10 bonus points.

Answer each question thoroughly and on separate paper. You may use textbooks, internet options, previous class notes to answer but you may not use classmates.

1. Describe the real number system. Include all of the types of number sets and how they are related.
2. Name 7 algebraic properties used in solving equations and give examples of them. Example: commutative property $3+2 = 2+3$
3. What's the difference between these types of equations: conditional, identities, and contradictions
4. What does it mean to solve an equation?
5. What are "extraneous solutions"? Give an example of a problem that has an "extraneous solution."
6. What does it mean for "y to be a function of x"?
7. What does it mean for "x to be a function of y"?
8. What are independent variables and which axis is used to represent the independent variable?
9. What are dependent variables and which axis is used to represent the dependent variable?
10. What is a domain?
11. What is a range?
12. Explain 3 methods that are used to tell whether a relation is a function.
13. Give the basic graphs of the following parent functions:
 - A.) $y = x^2$
 - B.) $Y=x$
 - C.) $Y = x^3$
 - D.) $y= x^4$
 - E.) $y=\sqrt{x}$
 - F.) $y=\sqrt[3]{x}$
 - G.) $y = |x|$
 - H.) $y=\frac{1}{x}$
 - I.) $y= \frac{1}{x^2}$
14. Who is the real coordinate system named after? Research this person and write a two paragraph summary about him.

15. What other coordinate systems exist? Research the other coordinate systems and write a 2-3 paragraph summarizing the information you discover.
16. Sallie simplifies the following expression incorrectly. Explain what she has done incorrectly and correct her mistake:

$$\frac{x^2 - 2x}{x^2}$$

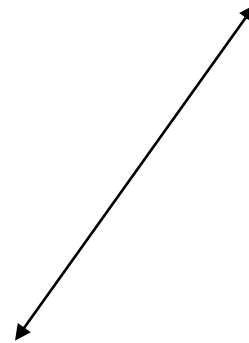
$$\frac{\cancel{x^2} - 2x}{\cancel{x^2}}$$

$$-2x$$

16. Justin attempts to graph the following function in his calculator and then sketches it on his paper. Something has gone terribly wrong. Find his mistake(s) and correct him.

$$F(x) = \frac{x^2 - 1}{x - 1}$$

Hint: It's very subtle.



17. The point (3,4) is on function, what point would definitely be on its inverse function?
18. How do we get the inverse of a function using algebraic methods? Use appropriate notation to explain.
19. How do we get the inverse of a function using graphical methods. Use appropriate notation to explain.
20. What is the definition of an exponential function and why are there restrictions included in this definition?
21. What is the inverse of an exponential function?

22. What are some practical applications of exponential functions?
23. What is a logarithmic function?
24. Research logarithmic spirals and write a paragraph explaining what you have discovered.
25. What is the number “e”?
26. A logarithm of base 10 is called the_____.
27. A logarithm of base e is called the_____.
28. What are asymptotes?
29. How do you find horizontal asymptotes?
30. How do you find vertical asymptotes?
31. What are different types of asymptotes?
32. Statement: All Honor’s Pre-Calculus students are smart and good-looking.
- Give the converse, inverse, and contrapositive of the above statement
33. Statement: If $x+3=5$, then $x=2$
- A. Give the converse, inverse, and contrapositive of the above statement
- B. Which statements are logically equivalent.
34. How are the distance formula and Pythagorean Theorem related?
HeheheheHahahahahahaha!!
35. What trig ratios do you know? List all that you know.
36. What is a perpendicular bisector?
37. What is an apothem?

38. Why are you taking Honor's Pre-Calculus? Be honest, there is "honor" involved. ☺
39. How do your future plans possibly involve math? Explain fully.
40. Are you interested in math competitions or starting a math team at ELCA? Explain.