

Pre-Calculus: 1.1 – 1.2

Functions and Their Properties

(Solving equations algebraically and graphically, matching graphs, tables, and equations, and finding the domain, range, VA, HA, etc.).

Name: _____

Date: _____ Hour: ____

SCORE: ____/106

Percent Correct: ____%

Be sure to SHOW ALL WORK. Answer questions completely. Be sure to write answers in spaces provided. If work or answers are in another location, please make note of that. Short answer or multiple choice problems are worth 2 points each. Other problems will be worth 4 points each based on our department 4 point rubric. There are 106 points possible.

8/4	Correct, complete, with appropriate work or explanations.
6/3	Correct strategy, minor errors, appropriate work or explanations.
4/2	Starts with appropriate strategy, some understanding, some errors.
2/1	Attempted appropriate strategy, minimal understanding.
0	Little or no understanding evident – OR – no work shown.

I. Select the appropriate graph and equation for each table of values. (2 points per answer. 16 total)

1. Equation _____ Graph _____

x	0	1	2	4
y	-1.67	-3.5	-9	13

3. Equation _____ Graph _____

x	-3	-2	-1	0
y	1	1.414	1.732	2

2. Equation _____ Graph _____

x	0	1	2	4
y	-1.67	-2.5	-5	5

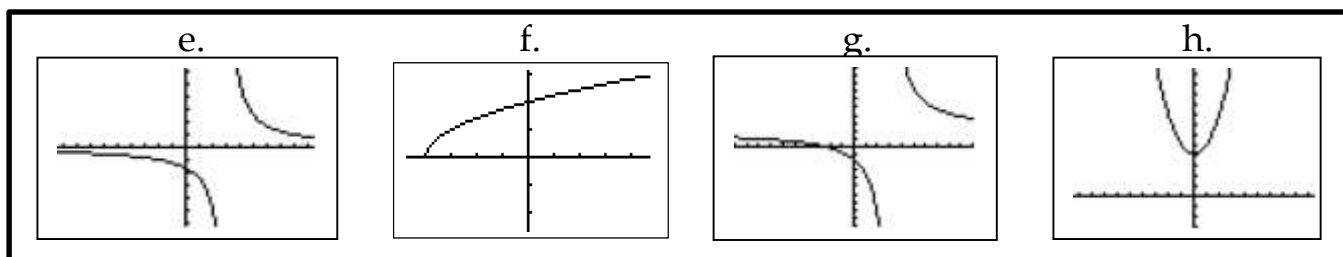
4. Equation _____ Graph _____

x	-2	-1	0	1
y	8	5	4	5

Equations:

a. $a(x) = \sqrt{x+4}$	b. $b(x) = \frac{5}{x-3}$	c. $c(x) = \frac{2x+5}{x-3}$	d. $d(x) = x^2 + 4$
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Graphs:



II. Solve each equation algebraically. (4 points each)

5. $3x^2 + 3x = 36$

6. $x^2 - 5x + 3 = 0$

III. Complete the table below. Fill in every box. (1 point per sketch and 2 points per box. 78 points total.)

	Equations	Sketch the Graph	Domain	Range	Vertical Asymptote	Horizontal Asymptote	Max./Min. (x, y)	Hole Yes or no? Where?
7.	$y = \frac{2x}{x-5}$							
8.	$y = \sqrt{2-x} - 3$							
9.	$x = -3$							
10.	$y = \frac{x-4}{x^2-x-12}$							
11.	$y = x^2 + 7x + 12$							
12.	$y = - x-1 + 4$							

13. In what type of equation would we expect to find a HORIZONTAL ASYMPTOTE?
Explain and give an example to support your answer. (4 points)

14. **EXTRA CREDIT:** Give an example of a function that fits the criteria below. There may be more than one possible solution. (Pick ONLY 2. 2 points each)

1. Domain: $(-\infty, \infty)$
Range: $(-\infty, -3)$

2. Domain: $(-3, \infty)$
Range: $(2, \infty)$

3. Vertical Asymptote: $x = -1$
Horizontal Asymptote: $y = 0$
Hole: $x = 4$