**Unit 3 Study Guide Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**3.1-3.7 Table # \_\_\_\_\_ Period \_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**3.1: Symmetry and Coordinate Geometry**

1. (a) Describe how you know whether a graph is symmetric about the origin.

(b) Determine whether the graph is symmetric with respect about the origin.

.

2.Briefly describe how you know whether a graph is symmetric to the following lines:

(a) -axis (b) -axis

(c) (d)

3. Determine whether the graph, , is symmetric with respect to the -axis, the -axis, the line , the line , or none of these.

**3.2: Families of Graphs**

4. List and sketch the seven parent graphs we learned in Pre- Calculus.

5. Identify and graph the parent function of . List the transformations you would perform to graph , than graph .

6. Identify and graph the parent function of . List the transformations you would perform to graph , than graph .

**3.3: Graphs of Nonlinear Inequalities**

7. Graph . 8. Graph .

9. Solve the following inequalities

a) b)

**3.4: Inverse Functions and Relations**

10. Graph and sketch its inverse. State whether the inverse is a function. Support your answer graphically.

11. Find . Then state whether is a function.

**3.5: Continuity and End Behavior**

12. Determine whether is continuous at . If not, indicate and sketch the type of discontinuity using your graphing calculator.

13. Determine whether is continuous at . If not, indicate and sketch the type of discontinuity using your graphing calculator.

14. Determine the end behavior, interval(s) of increase, and decrease for the function using your graphing calculator.

.

**3.6: Critical Points and Extrema**

15. Determine and classify the extrema of

**3.7: Graphs of Rational Functions**

15. Determine the vertical and horizontal asymptote of the equation: . Then graph.

16. Determine the vertical and horizontal asymptote of the equation: . Then graph.

17. Identify the hole and sketch the graph.

18. Identify the zeros and asymptotes. Then sketch the graph.