

Name: _____

Precalculus Exam Review #1

This review is to determine if you understand the material. Do this review as though it was a real exam. For those questions that you are having difficulty with, go to the corresponding section and review the material again.

1. Find the domain of each function. Write the answer in interval notation.

a. $y = \frac{1}{\sqrt{x^4 - 2x^2 - 63}}$

b. $y = x^5 - 2x^2 + 89$

c. $y = \frac{1}{x^4 - 81}$

d. $y = \sqrt{\frac{16 - x^2}{x + 5}}$

2. Compute the difference quotient $\frac{f(x+h) - f(x)}{h}$ for each function and simplify the result.

a. $y = \sqrt{1-2x}$

b. $y = \frac{1}{1-2x}$

3. For each graph, describe in words how you would transform each graph using a known parent function. Then sketch the graph.

a. $y = -|x-1| + 3$

b. $y = -\sqrt{2-x} + 5$

4. Find the inverse of the following function. Show that your answer is indeed the inverse.

$$f(x) = \frac{2x+3}{x-1}$$

5. For each function below, determine the symmetry and if it is even or odd.

a. $f(x) = x\sqrt{1-x^2}$

b. $g(x) = 4x^{2/3}$

c. $f(x) = x^3 - 5x$

6. Consider the following quadratic equation $y = 4x^2 + 4x + 5$.

a. Write the quadratic equation in general form.

b. Compute the vertex in two ways and determine if it is a maximum or a minimum.

c. Sketch the graph of the quadratic function.

7. Sketch the graph by finding the zeroes with their multiplicities and the end behavior.

$$y = -x^3 + 7x^2 - 10x$$

8. Compute $\frac{6x^4 - 4x^3 - 27x^2 + 18}{2x^2 - 1}$ using long division.

9. Find all real zeroes of the following polynomial.

$$f(x) = 2x^4 + 7x^3 - 4x^2 - 27x - 18$$

10. Sketch the graph of the following rational functions by finding the domain, asymptotes(if any), and intercepts.

a. $y = \frac{x^2 - x - 2}{x^3 - 2x^2 - 5x + 6}$

b. $y = \frac{12 - 2x - x^2}{8 + 2x}$