

Math 1203 Quiz 2

January 22, 2019

Name: \_\_\_\_\_

Instructions: No calculators! Answer all problems in the space provided! Do your rough work on scrap paper.

1. Expand and simplify:

(a)  $(a - b)^2 =$  \_\_\_\_\_ (b)  $(x + y)(a + b) =$  \_\_\_\_\_

(c)  $a(x + 2) =$  \_\_\_\_\_ (d)  $(a + b)c =$  \_\_\_\_\_

2. Sketch the following:

$y = \frac{1}{x}$

$y = x^2$

$y = x^3$

$y = |x|$

3. For  $ax^2 + bx + c = 0$ , state the quadratic formula: \_\_\_\_\_  
(Note: the quadratic formula is an equation.)

4. Find the  $x$ - and  $y$ -intercepts of  $y = 6x^2 + x - 1$ :  $x$ -int: \_\_\_\_\_,  $y$ -int: \_\_\_\_\_

5. If  $f(x) = x^2 - x + 1$ , compute and simplify  $\frac{f(x+h)-f(x)}{h} =$  \_\_\_\_\_

6. Factor:  $2x^3 - 2x^2 - 4x =$  \_\_\_\_\_

7. Simplify:  $\frac{x^3+2x^2-25x-50}{x-5} =$  \_\_\_\_\_

8. Complete the rules:

(a)  $a^x \cdot a^y =$  \_\_\_\_\_ (b)  $\frac{a^x}{a^y} =$  \_\_\_\_\_ (c)  $(a^x)^y =$  \_\_\_\_\_

**Bonus:**

1. Find the domain of  $f(x) = \frac{4}{\sqrt{x^2-9}}$  in interval notation.  $dom(f) =$  \_\_\_\_\_

2. If  $f(x) = \begin{cases} 2 - x^2 & \text{if } x < 3 \\ 7 & \text{if } 3 \leq x < 5 \\ 1 + x & \text{if } x \geq 5 \end{cases}$ , what is  $f(2)$ ?  $f(2) =$  \_\_\_\_\_

3. If  $f(x) = \sqrt{x^3 + 1}$  and  $g(x) = 3x^2 - 4$ , find and simplify  $g \circ f(x) =$  \_\_\_\_\_