

Math 195 Quiz 4B

February 20, 2019

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

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

1. Complete the following rules:

(a)  $x^a \cdot x^b =$  \_\_\_\_\_ (b)  $x^{a/b} =$  \_\_\_\_\_ (c)  $x^{-n} =$  \_\_\_\_\_ (d)  $\frac{x^a}{x^b} =$  \_\_\_\_\_

(e)  $a^2 - b^2 =$  \_\_\_\_\_ (f)  $a^3 - b^3 =$  \_\_\_\_\_

2. Combine and simplify the following rational expressions:

(a)  $5 - \frac{a}{2a+1} =$  \_\_\_\_\_ (b)  $2 + \frac{1}{a} + \frac{a}{3a+9} - \frac{3}{a^2+3a} =$  \_\_\_\_\_

(c)  $\frac{3x^2+7xy-20y^2}{x^2+5xy+4y^2} \div \frac{3x^2-17xy+20y^2}{3x-12y} =$  \_\_\_\_\_ (d)  $\frac{4 - \frac{4}{x} + \frac{1}{x^2}}{4 - \frac{1}{x^2}} =$  \_\_\_\_\_

(e)  $\frac{2a-4}{a+2} - \frac{a-6}{a+2} =$  \_\_\_\_\_

3. Reduce and simplify the following rational expressions:

(a)  $\frac{x^6-64}{x^2-4} =$  \_\_\_\_\_ (b)  $\frac{ad-ad^2}{d-1} =$  \_\_\_\_\_

(c)  $\frac{250a+100ab+10ab^2}{50a-2ab^2} =$  \_\_\_\_\_ (d)  $\frac{14x^2+45x-14}{42x^2+23x-10} =$  \_\_\_\_\_

(e)  $\frac{28x^3y^5+42x^4y^3}{7x^2y^2} =$  \_\_\_\_\_

**Bonus** (after attempting the problems above, do these for extra credit):

1. Solve for  $x$ :  $\frac{x}{x+2} + \frac{2}{3} = \frac{2}{x+2} \Rightarrow x =$  \_\_\_\_\_

2. Combine:  $\left(1 + \frac{2}{x+2}\right)\left(1 + \frac{2}{x+4}\right)\left(1 + \frac{2}{x+6}\right)\left(1 + \frac{2}{x+8}\right) =$  \_\_\_\_\_