

Math 195 Quiz 5B

February 25, 2019

Name: ANSWERS

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

1. Complete the following rules:

(a) $x^a \cdot x^b = x^{a+b}$ (b) $x^{a/b} = \sqrt[b]{x^a}$ (c) $x^{-n} = \frac{1}{x^n}$ (d) $\frac{x^a}{x^b} = x^{a-b}$

(e) $a^2 - b^2 = (a-b)(a+b)$ (f) $a^3 - b^3 = (a-b)(a^2 + ab + b^2)$

2. Solve the following equations:

(a) $\frac{2}{5}x - 1 = \frac{3}{10}x + 3 \Rightarrow x = 40$ (b) $x^2 + 8x + 12 = 0 \Rightarrow x = -6; -2$

(c) $2x^2 + 7x + 3 = 0 \Rightarrow x = -3; -\frac{1}{2}$ (d) $x^3 - x^2 - 4x + 4 = 0 \Rightarrow x = -2; 1; 2$

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

1. Solve the following equations:

(a) $\frac{3}{x+1} - \frac{1}{2} = \frac{1}{3x+3} \Rightarrow x = \frac{13}{3}$

(b) $\sqrt{2x+1} + 1 = x \Rightarrow x = 4$

2. Solve the following inequality, write your answer in interval notation:

$x^2 - 3x - 18 \geq 0 \Rightarrow x \in (-\infty, -3] \cup [6, \infty)$