Math 195 Quiz 6B
March 6, 2019

Name: _____

Instructions: No calculators! Answer <u>all</u> 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. Let (x_1, y_1) and (x_2, y_2) be two points in the Cartesian plane. State a formula that gives the:

(a) Midpoint between the two points: $M =$ _____

(b) The distance between the two points: $d =$ _____

3. Solve the following equations:

(a) $1 + \frac{3}{x^2} = \frac{4}{x} \Longrightarrow x =$ _____ (b) $\frac{1}{x} = \frac{1}{y} - \frac{1}{z} \Longrightarrow x =$ _____

(c) $\frac{4}{x-2} + \frac{2}{x+2} = \frac{15}{x^2-4} \Longrightarrow x =$ _____ (d) $4 + \sqrt{x+2} = x \Longrightarrow x =$ _____

4. Solve the following inequalities (write your answer in interval notation):

(a) $|8x + 3| > 12 \Longrightarrow x \in$ _____ (b) $\frac{x+2}{x+3} \geq \frac{x-1}{x-2} \Longrightarrow x \in$ _____

(c) $x^2 - 2x \leq 3 \Longrightarrow x \in$ _____

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

1. Compute the distance between $(4, -3)$ and $(-2,5)$: $d =$ _____

2. Compute the midpoint between $(4, -3)$ and $(-2,5)$: $M =$ _____

3. Find the equation of the circle that has $(4, -3)$ and $(-2,5)$ as endpoints of its diameter.

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