

Name: _____

Math 111, Intro to Math Methods and Applications – Crawford

Exam 1 - Form B1

30 September 2015

Score

1	/6
2	/20
3	/6
4	/20
5	/5
6	/10
7	/15
8	/20
Total	/100

- Books or notes (in any form) are not allowed.
- Calculators are not allowed on Part I. You may use a calculator on Part II.
- *Show all your work* – partial credit may be given for written work.
- Clearly indicate your answers.
- Good Luck!

Part I

Calculators are *not* allowed on Part I.

You must completely finish Part I and turn it in before you work on Part II.

1. (6 pts). Sketch the following interval on the number line **and** write the answer in interval notation.

$$[-4, 5) \cap (-5, 0)$$

2. (20 pts). Evaluate the following. Simplify and reduce fractions, when possible.

(a). $\frac{2 \cdot 4 - 6}{2 - 2(2 - 5)^2}$

(b). $-\frac{8}{5} \div 4$

(c). $\frac{3}{4} + \frac{1}{2} - \frac{3}{10}$

(d). $\frac{6^3}{-6^2 \cdot 6^{-5}}$

3. (6 pts). Evaluate the following powers and roots. If it is not a real number, clearly state so.

(a). $16^{-1/2}$

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

Part II

Calculators are allowed on Part II.

You must completely finish Part I and turn it in before you work on Part II.

4. (20 pts). Simplify the following. Use only positive exponents (i.e. no radicals, no negative exponents).

(a). $\frac{x^{-3}}{x^3}$

(b). $\left(\frac{ab^{-2}}{3^{-2}a^3b^4}\right)^{-3}$

(c). $a^{2/3} \cdot a^3$

(d). $\left(u^{1/2}v^{3/4}\right)^8$

5. (5 pts). Simplify the following expression by removing perfect powers from the radicand. Leave the radical sign in your answer. [Assume nonnegative variables.]

$$\frac{\sqrt[3]{32x^6}}{\sqrt[3]{27y^4}}$$

6. (10 pts).

(a). Rewrite the following in exponential form and simplify. [No radicals and positive exponents only] $3y^2 \sqrt{y^3}$

(b). Write the following in radical form. $-4x^{3/4}$

7. (15 pts). Perform the indicated operations and simplify.

(a). $(3x^2 - 2y)(x^2 + 2y)$

(b). $(x - 4)(x^2 + 3x - 6)$

(c). $(z + 3)^3$

8. (20 pts). Factor completely.

(a). $x^2 - 2x - 15$

(b). $6x^3 + 33x^2 + 36x$

(c). $16a^4 - b^2$

(d). $2x^3 - x^2y + 6x - 3y$