

## MATH 111 WORKSHEET 5

Show all work for full credit.

1. Simplify each of the following. Express answers with positive exponents only.

a.  $\left(\frac{6m^{-5}n^2}{3m^2n^{-6}}\right)^2$

b.  $\frac{(2x^{-3}y^2)^4(3xy^{-3})^{-2}}{(3x^{-4}y^{-2})^{-4}}$

2. Write each of the following numbers in scientific notation.

a. 345,000,000

b. 0.000000982

3. Find the exact value for each of the following without using your calculator.

a.  $64^{-3/2}$

b.  $(-27)^{-2/3}$

4. Add whenever possible. Simplify your answer.

a.  $\sqrt{96x} + \sqrt{216x}$

b.  $\sqrt[3]{32x^7} + \sqrt[3]{54x^7}$

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5. Rationalize the denominator. Simplify.

a.  $\frac{4-\sqrt{6}}{2+\sqrt{6}}$

6. Factor completely.

a.  $3x^2 - 12x - 63$

b.  $6x^2 - 11x - 10$

c.  $64x^3 - 216y^3$

d.  $12x^2y - 22xy - 70y$

e.  $2x^5 + 3x^4 - 2x - 3$