

Student: \_\_\_\_\_  
Date: \_\_\_\_\_  
Time: \_\_\_\_\_

Instructor: Josh Ducey  
Program: Math 199E (Version for Math  
205), Fall 2014  
Test Bank: MyMathTest: Basic Algebra,  
Precalculus and Calculus

Assignment: Qualifier 3: Factoring and  
Simplifying

1. Factor and simplify the algebraic expression.

$$(x + 3)^{-1/5} - (x + 3)^{-6/5}$$

$$(x + 3)^{-1/5} - (x + 3)^{-6/5} = \square \text{ (Use positive exponents only.)}$$

2. Factor completely.

$$a^4 - 4096$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

A.  $a^4 - 4096 = \square$

(Type your answer in factored form. Simplify your answer.)

B. The polynomial is prime.

3. Factor the trinomial.

$$3s^2 - 10s + 8$$

Select the correct choice below and fill in any answer boxes within your choice.

A. The answer is  $\square$ .

B. The trinomial is not factorable.

4. Simplify the given expression. Write the answer with positive exponents. Assume that all variables represent positive numbers.

$$\frac{\left(2y^{\frac{1}{4}}\right)^3}{y^{\frac{1}{12}}}$$

$$\frac{\left(2y^{\frac{1}{4}}\right)^3}{y^{\frac{1}{12}}} = \square$$

(Simplify your answer. Type exponential notation with positive exponents. Use integers or fractions for any numbers in the expression.)

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5. Factor completely.

$$18x^2(x+1) - 15x(x+1) - 7(x+1)$$
$$18x^2(x+1) - 15x(x+1) - 7(x+1) = \square$$

6. Factor the algebraic expression.

$$x^{4/7} - x^{1/7}$$
$$x^{4/7} - x^{1/7} = \square$$

7. Simplify the exponential expression. Assume the variables represent nonzero real numbers.

$$\frac{(2^{-1}x^{-4}y^{-3})^{-2}(2x^{-3}y^3)^{-2}(8x^{-6}y^7)^0}{(2x^{-5}y^{-2})^2}$$
$$\frac{(2^{-1}x^{-4}y^{-3})^{-2}(2x^{-3}y^3)^{-2}(8x^{-6}y^7)^0}{(2x^{-5}y^{-2})^2} = \square$$

(Simplify your answer. Use positive exponents only.)

8. Perform the indicated operation and simplify the result. Leave your answer in factored form.

$$3 + \frac{1}{x}$$
$$7 - \frac{1}{x}$$
$$3 + \frac{1}{x}$$
$$\frac{x}{7 - \frac{1}{x}} = \square$$

(Simplify your answer. Use integers or fractions for any numbers in the expression.)

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9. Use the exponent rule to simplify the expression. Assume the variables represent nonzero real numbers.

$$\frac{(m^6n)^{-4}}{m^{-2}n^6}$$

$$\frac{(m^6n)^{-4}}{m^{-2}n^6} = \square$$

(Simplify your answer. Type answer in exponential notation using positive exponents.)

10. Simplify.

$$\frac{\frac{4}{x+7} + \frac{6}{x-4}}{\frac{7}{x-4} - \frac{4}{x+7}}$$

$$\frac{\frac{4}{x+7} + \frac{6}{x-4}}{\frac{7}{x-4} - \frac{4}{x+7}} = \square$$

(Simplify your answer.)