Student: _____ **Date:** _____ **Time:** _____	**Instructor:** Josh Ducey **Program:** 199E: Precalculus/Algebra Gateway **Test Bank:** MyMathTest: Basic Algebra, Precalculus and Calculus	**Assignment:** Qualifier 3: Factoring and Simplifying

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

$$\frac{(m^5n)^{-6}}{m^{-20}n^4}$$

$$\frac{(m^5n)^{-6}}{m^{-20}n^4} = \square$$

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

2. Factor the algebraic expression.

$$x^{4/8} - x^{1/8}$$

$$x^{4/8} - x^{1/8} = \square$$

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

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

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

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

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

$$\frac{(4^{-1}x^{-4}y^{-5})^{-2}(4x^{-3}y^4)^{-2}(16x^{-2}y^6)^0}{(4x^{-3}y^{-5})^2}$$

$$\frac{(4^{-1}x^{-4}y^{-5})^{-2}(4x^{-3}y^4)^{-2}(16x^{-2}y^6)^0}{(4x^{-3}y^{-5})^2} = \square$$

(Simplify your answer. Use positive exponents only.)

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5. Factor the trinomial.

$4b^2 - 9b + 5$

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

A. The answer is ☐.

B. The trinomial is not factorable.

6. Factor and simplify the algebraic expression.

$(x+8)^{-1/4} - (x+8)^{-5/4}$

$(x+8)^{-1/4} - (x+8)^{-5/4} =$ ☐ (Use positive exponents only.)

7. Factor completely the given polynomial.

$x(x+4) - 5(x+4)$

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

A. $x(x+4) - 5(x+4) =$ ☐

B. The polynomial is prime.

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

$$\frac{1+\frac{1}{x}}{6-\frac{1}{x}}$$

$$\frac{1+\frac{1}{x}}{6-\frac{1}{x}} = \square$$

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

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9. Simplify.

$$\frac{\frac{5}{x+5}+\frac{6}{x-8}}{\frac{2}{x-8}-\frac{5}{x+5}}$$

$$\frac{\frac{5}{x+5}+\frac{6}{x-8}}{\frac{2}{x-8}-\frac{5}{x+5}} = \square$$

(Simplify your answer. Do not factor the numerator or denominator.)

10. Factor completely.

$$v^4 - 625$$

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

- A. $v^4 - 625 =$ ▪
- B. The polynomial is prime.