

Name: KEY

Read all directions and problems carefully! Show all appropriate work for credit.

1. Find the quotient using long division.

$$\frac{6x^2 + 13x - 16}{2x + 7}$$

$$\begin{array}{r} 3x - 4 \\ 2x + 7 \overline{) 6x^2 + 13x - 16} \\ \underline{\oplus 6x^2 \oplus 21x} \\ -8x - 16 \\ \underline{+ \oplus 8x \oplus 28} \\ 12 \end{array}$$

$$= 3x - 4 + \frac{12}{2x + 7}$$

2. Perform the indicated operations on the following fractions/rational expressions. Leave all answers reduced to lowest terms.

$$\frac{3xy^2}{x^2y^2} + \frac{4x^2y}{x^2y^2}$$

$$\frac{3xy^2 + 4x^2y}{x^2y^2} = \frac{\overset{\text{GCF:}}{\cancel{xy}}(3y + 4x)}{\overset{x^1 y^1}{x^2 y^2}} = \frac{3y + 4x}{xy}$$

$$\frac{2y + 1}{y^2 - y - 30} - \frac{y - 4}{y^2 - y - 30}$$

$$\frac{2y + 1 - y + 4}{(y + 5)(y - 6)} = \frac{y + 5}{(y + 5)(y - 6)} = \frac{1}{y - 6}$$

3. Find the LCM of the following monomials/polynomials

$$12a^3b^2 ; 18a^2b^4$$

$$\text{LCM} = 36a^3b^4$$

$$4x + 28 ; 6x + 42 \rightarrow \text{GCF}$$

$$4(x + 7) ; 6(x + 7) \\ \text{LCM} = 12(x + 7)$$

$$x^2 - 9 ; x^2 + 6x + 9$$

$$(x - 3)(x + 3) ; (x + 3)(x + 3) = (x + 3)^2 \\ \text{LCM} = (x - 3)(x + 3)^2$$