M117 SECTION 7.1 Simplifying Rational Expressions

Given: $f(x) = \dfrac{3x^2 - 4x}{8x}$ *(To find the value of a funtion at a particular x,plug in the the value(s) of the variable(s) and then find the value of the expression.)*

Find: f(3) Find: f(−1)

Find the Domain of a Rational Function.

(Recall that division by 0 is undefined. So you need to find all values that make therational expression undefined. Set the denominator equal to 0 and solve. These values make the expression undefined.)

$f(z) = \dfrac{7}{z + 6}$ $f(x) = \dfrac{x^2 - 49}{x^2 - 7x + 12}$

Simplifying a Rational Expression

Write the following rational expressions in lowest terms. (This just means reduce the expression.)

a. If possible, FACTOR THE NUMERATOR AND/OR DENOMINATOR

b. Cancel out any like factors. NEVER CANCEL A TERM!!!

(Hint: Terms are separated by + and − signs. Factors are separate by • sign.)

$-\dfrac{16x^4y^3}{24x^2y}$ *(Factor out the GCF)* *(Factor out the GCF)* $\dfrac{9x + 21}{12x + 28}$

(Difference of 2 Squares) *(Trinomial – Leading 1)* $\dfrac{a^2 - 25}{a^2 + 9a + 20}$

(Factor out the GCF) *(Factor out the GCF Trinomial – No Leading 1)* $\dfrac{2x + 2}{10x^2 + 14x + 4}$

(Factor by Grouping)
(GCF)

$$\frac{x^2 - 9 - 2x - 6}{2x + 6}$$

(Sum of 2 Cases)
(GCF then Trinomial – Leading 1)

$$\frac{y^3 + 8}{y^3 - 2y^2 + 4y}$$

A SPECIAL CASE

$$\frac{2 - m}{m - 2}$$