

Name \_\_\_\_\_

Date \_\_\_\_\_

Advanced Algebra

Unit 5 Polynomials: Assignment #12

I can work with rational Expressions:

NOTE: You MUST completely factor every problem BEFORE you cancel like terms!

<p>1) <math>\frac{16x^3}{5y^9} * \frac{x^3y^7}{80xy^2}</math></p> <p><math>\frac{x^6y^7}{25x^4y^4}</math></p> <p><math>\frac{x^5}{25y^{11}}</math></p>	<p>2) <math>\frac{x^{10}y^4}{33x^4} * \frac{39x^5}{4y^{10}}</math></p> <p><math>\frac{39x^5y^4}{33(4)x^4y^{10}}</math></p> <p><math>\frac{13x^{11}}{44y^6}</math></p>
<p>3) <math>\frac{2x^2-10}{(x+1)} * \frac{(x-4)}{4x^2-20}</math></p> <p><math>\frac{2(x^2-5)}{(x+1)} * \frac{(x-4)}{4(x^2-5)}</math></p> <p><math>\frac{(x-4)}{2(x+1)}</math></p>	<p>4) <math>\frac{x^2+3x}{x^2+6x+8} * \frac{x^2+x-2}{4x^3+12x^2}</math></p> <p><math>\frac{x(x+3)}{(x+4)(x+2)} * \frac{(x+2)(x-1)}{4x^2(x+3)}</math></p> <p><math>\frac{x(x-1)}{4x(x+4)}</math></p>
<p>5) <math>\frac{(x-3)}{2x-8} * \frac{6x^2-96}{x^2-9}</math></p> <p><math>\frac{(x-3)}{2(x-4)} * \frac{6(x^2-16)}{(x-3)(x+3)}</math></p> <p><math>\frac{(x-3)}{2(x-4)} * \frac{6(x-4)(x+4)}{(x-3)(x+3)}</math></p> <p><math>\frac{3(x+4)}{(x+3)}</math></p>	<p>6) <math>\frac{x^2-5x-6}{4x^5} * \frac{x+2}{x^2+3x+2}</math></p> <p><math>\frac{(x-6)(x+1)}{4x^5} * \frac{(x+2)}{(x+2)(x+1)}</math></p> <p><math>\frac{(x-6)}{4x^5}</math></p>

$$7) \frac{x^2+6x-7}{x^4+8x^3+7x^2} * \frac{3x^2}{1}$$

$$\frac{(x+7)(x-1)}{x^2(x^2+8x+7)} \cdot \frac{3x^2}{1}$$

$$\frac{3(x-1)}{(x+1)}$$

$$\frac{(x+7)(x-1)}{x^2(x+7)(x+1)} \cdot \frac{3x^2}{1}$$

$$8) \frac{(x+2)}{1} * \frac{x^2-9}{x^2-x-6}$$

$$\frac{\cancel{x+2}}{1} \cdot \frac{(x+3)(x-3)}{(x-3)(x+2)}$$

$$x+3$$

$$9) (x^2+8x+16) * \frac{16x^2-64}{x^2-16}$$

$$\frac{(x+4)(x+4)}{1} \cdot \frac{16(x^2-4)}{(x-4)(x+4)}$$

$$\frac{16(x+4)(x-2)(x+2)}{(x-4)}$$

$$\frac{(x+4)(x+4)}{(x+4)(x+4)} \cdot \frac{16(x-2)(x+2)}{(x-4)(x+4)}$$

$$10) \frac{2x^2-2}{x^2-6x-7} * (x^2-10x+21)$$

$$\frac{2(x^2-1)}{2(x-1)(x+1)} \cdot \frac{(x-7)(x-3)}{(x-7)(x+1)}$$

$$2(x-1)(x-3)$$

Review:

Remember how to complete the square? Great way to solve quadratics. Example: Solve  $x^2+6x-5=0$

$(x^2+6x+9) - 9 - 5 = 0$   $(\frac{6}{2})^2$  goes in the blanks. And then you get a perfect square. So  $(x^2+6x+9) - 9 - 5$  which is  $(x+3)^2 - 14 = 0$

Now you get  $x = -3 \pm \sqrt{14}$

Solving quadratic equations with the complete the square method:

1)  $f(x) = x^2 + 6x - 18$  what is  $x$  when  $f(x) = 12$

$$x^2 + 6x - 18 = 12 \quad \text{so} \quad x^2 + 6x - 30 = 0$$

$$x^2 + 6x + 9 - 9 - 30 = 0$$

2)  $f(x) = x^2 - 8x + 12$  what is  $x$  when  $f(x) = 25$

$$x^2 - 8x + 12 = 25$$

$$x^2 - 8x - 13 = 0$$

$$x^2 - 8x + 16 - 16 - 13$$

$$(x-4)^2 - 29$$

$$x = 4 \pm \sqrt{29}$$

$$(x+3)^2 - 39$$

$$x = -3 \pm \sqrt{39}$$