

2024

Name _____

Date _____

Advanced Algebra

Unit 5: Polynomials

Assignment #13

Learning Target: I can divide fractions

I know that to divide fractions I follow the following steps

- a) Reciprocal the second
- b) Multiply
- c) Remember: Before I can do any canceling, I need to factor the problems completely. You must FACTOR before you can cancel!!

Example from Elementary/ Middle school: $\frac{6}{8} \div \frac{3}{20}$

Reciprocal the second and Multiple so you now have $\frac{6}{8} * \frac{20}{3}$ You can now REDUCE vertically or on a diagonal So you get $\frac{2}{2} * \frac{5}{1}$ Now that I am done Reducing, I will multiply straight across the top and straight across the bottom. This gives us an answer of $\frac{10}{2}$ We can now reduce this to just 5.

We have already multiplied fraction in our previous assignment (#12). So after you factor these problems, you Reciprocal the second and multiply. At that point it is the same as Assignment #12. There is only the added step of Reciprocal the second and Multiply!

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|--|--|
| <p>1) $\frac{x^2+11x+28}{(x-2)} \div \frac{x^2+5x-14}{4x-8}$</p> <p>$\frac{\cancel{(x+7)}(x+4)}{(x-2)} \cdot \frac{4\cancel{(x-2)}}{\cancel{(x+7)}(x-2)}$</p> | <p>2) $\frac{x^2+8x+12}{x^2-6x} \div \frac{x^2-3x-10}{2x-12}$</p> <p>$\frac{(x+6)\cancel{(x+2)}}{x\cancel{(x-6)}} \cdot \frac{2\cancel{(x-6)}}{(x-5)\cancel{(x+2)}}$</p> |
| <p>3) $\frac{x^2+1x-20}{x^2+2x-8} \div \frac{x^2+1x-20}{x^2-6x-40}$</p> <p>$\frac{\cancel{(x+5)}(x-4)}{\cancel{(x+4)}(x-2)} \cdot \frac{\cancel{(x-10)}\cancel{(x+4)}}{\cancel{(x+5)}(x-4)}$</p> | <p>4) $\frac{x^2+8x-20}{x^2-x-12} \div \frac{x^2+4x-60}{x^2+3x}$</p> <p>$\frac{\cancel{(x+10)}(x-2)}{(x-4)(x+3)} \cdot \frac{x\cancel{(x+3)}}{\cancel{(x+10)}(x-6)}$</p> |

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

$\frac{2(x+6)}{x(x-5)}$

$\frac{(x-10)}{(x-2)}$

$\frac{x(x-2)}{(x-4)(x-6)}$

$$5) \frac{x^2-4x-12}{3x^2-x} \div \frac{(x-6)}{x}$$

$$\frac{(x-6)(x+2)}{\cancel{3x-1} \cdot (x-6)} \cdot \frac{x}{(x-6)}$$

$$6) \frac{x^2-6x-40}{8x^2-4x} \div \frac{x^2-8x-20}{4x}$$

$$\frac{(x-10)(x+4)}{4x(2x-1)} \cdot \frac{4x}{(x-10)(x+2)}$$

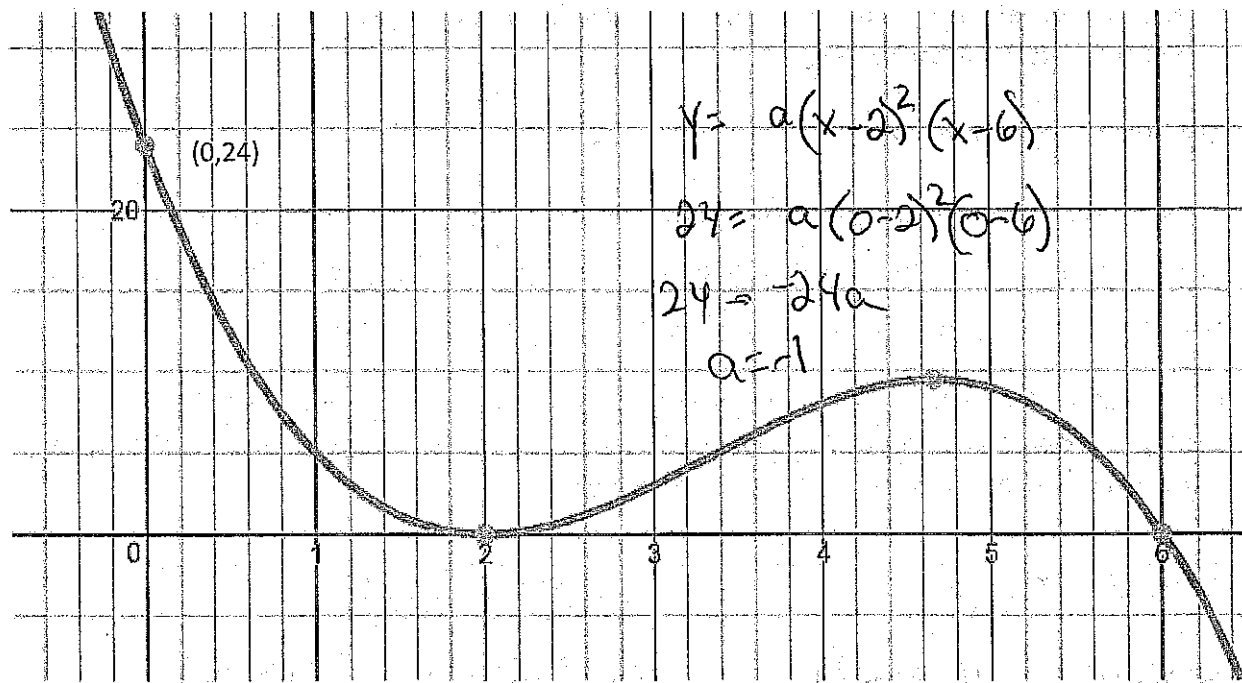
$$7) \frac{x^2+7x-30}{9x^2-3x} \div \frac{x^2-9}{3x}$$

$$\frac{(x+10)(x-3)}{\cancel{3x} \cdot (3x-1)} \cdot \frac{\cancel{3x}}{(x-3)(x+3)}$$

$$\frac{x+10}{(3x-1)(x+3)}$$

Review: Write the equation of the following graph. Remember if a graph "Touches" the x axis that is called a **double root**. Any double root is written twice. So you would write (x-a)(x-a) if it touched at a.

Problem #8



Equation of Graph for #8

$$y = -1(x-2)^2(x-6)$$

#9 $\frac{5}{(m+3)} = \frac{-5}{(m-1)}$

$$5m - 5 = -5m - 15$$

$$10m = -10$$

$$m = -1$$

#10 $\frac{3}{(a-2)} = \frac{-5}{(a-10)}$

$$3a - 30 = -5a + 10$$

$$8a = 40$$

$$a = 5$$

#11 $\frac{4}{(a-8)} = \frac{6}{(a+5)}$

$$4a + 20 = 6a - 48$$

$$68 = 2a$$

$$34 = a$$

#12 $\frac{6}{(x+4)} = \frac{2}{(x+2)}$

$$6x + 12 = 2x + 8$$

$$4x = -4$$

$$x = -1$$

#13 $\frac{4}{(x+1)} = \frac{8}{(x+5)}$

$$4x + 20 = 8x + 8$$

$$12 = 4x$$

$$x = 3$$

#14 $\frac{3}{(x+1)} = \frac{4}{(x+\frac{11}{3})}$

$$3x + 11 = 4x + 4$$

$$7 = x$$