Find this quotient. Give remainder in any form.

$$\frac{8x^{4} + 2x^{3} - 3x^{2} + 24x + 17}{4x + 3}$$

$$\frac{2 \times x^{3} - x^{2}}{8x^{4} + 2x^{3} - 3x^{2} + 24x + 17}$$

$$- \frac{8x^{4} + 6x^{3}}{-4x^{3} - 3x^{2}}$$

$$\frac{8x^{4} + 2x^{3} - 3x^{2} + 24x + 17}{-4x^{3} - 3x^{2}}$$

$$\frac{8x^{4} + 2x^{3} - 3x^{2} + 24x + 17}{-4x^{3} - 3x^{2}}$$

$$\frac{8x^{4} + 2x^{3} - 3x^{2} + 24x + 17}{-4x^{3} - 3x^{2}}$$

$$\frac{8x^{4} + 2x^{3} - 3x^{2} + 24x + 17}{-4x^{3} - 3x^{2}}$$

$$\frac{8x^{4} + 2x^{3} - 3x^{2} + 24x + 17}{-4x^{3} - 3x^{2} + 24x + 17}$$

$$\frac{8x^{4} + 2x^{3} - 3x^{2} + 24x + 17}{-4x^{3} - 3x^{2} + 24x + 17}$$

$$\frac{-4x^{3} - 3x^{2}}{-3x^{2}}$$

if all the terms cancel when subtracting you need to "bring down" the same

Find this quotient. Give remainder in any form.

number of terms as there is in the divisor

$$10x^{4} - 45x^{3} + 82x^{2} - 54x + 84$$

$$5x^{2} + 6$$

$$2x^{2} - 9x + 14$$

$$5x^{2} + 0x + 6$$

$$10x^{4} - 75x^{2} + 82x^{2} - 54x + 84$$

$$- 10x^{4} - 75x^{2} + 82x^{2} - 54x + 84$$

$$- 10x^{4} - 9x^{2} + 12x^{2} + 12x^{2} + 12x^{2}$$
when there is a missing term in the divisor it is easier if you put a zero in that spot. This way terms will line up when it comes time to subtract.

$$- 10x^{4} - 45x^{3} + 82x^{2} - 54x + 84$$

$$- 10x^{4} - 9x^{2} + 12x^{2} + 12x^$$

Find this quotient. Give remainder in any form.

$$\frac{12x^3 + 2x^2 + 11}{3x + 5}$$
When there is a missing term in the dividend it is easier if you put a zero in that place before you do the division.
$$-(2x + 10)$$

$$-(2x^3 + 2x^2 + 6x + 1)$$

$$-(3x^3 + 2x^2 + 6x + 1)$$

What must be true for a number to be a factor of another number?

There must be NO remainder when they are divided.

Is 
$$x + 4$$
 a factor of  $2x^3 - 12x^2 + 8x - 20$ 

$$2x^5 - 20x + 58$$

$$x + 4 \int 2x^3 - 12x^2 + 5x - 20$$

$$-2x^3 + 5x^2 - 20x^2 + 5x$$

$$-20x^2 + 5x$$

$$-20x^2 - 80x$$

$$88x + 352$$

$$88x + 352$$

No, x+4 is not a factor because the remainder isn't zero.

Now you can finish Hwk #30

Sec 6-3

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Due on Monday, Jan 9.

Problems 9, 10, 37-41

Find real solutions by graphing.

$$x^3 - 7x^2 + 25x - 39 = 0$$

The solution found by graphing is x=3. This solution(x-int) came from the following factor: (x-3)

Use this information to find ALL Complex solutions by dividing to find another factor.

$$\times -3$$
  $\times = -4 \times +13$   
 $\times = -4 \times +13$   
 $\times = -3$   
 $\times = -4 \times +25 \times -39$   
 $\times = -3$   
 $\times = -4 \times +25 \times -39$   
 $\times = -4 \times +25 \times -39$   
 $\times = -4 \times +25 \times -39$   
 $\times = -3$   
 $\times = -3$ 

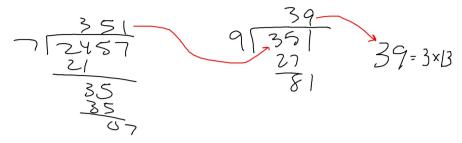
The other factor is:  $x^2 - 4x + 13$ 

By using the Quadratic Formula you can find the other two solutions.

$$b^{2}-4\alpha c = -36$$
  
 $X = \frac{4 \pm \sqrt{-36}}{2} = \frac{4 \pm 6}{2} = 2 \pm 3i$ 

The three solutions are  $x = 3, 2\pm3i$ 

7 and 9 are factors of 2457. The other two factors are prime numbers. Find these other two factors.



Divide 2457 by one of the factors ( $2457 \div 7 = 351$ ). This quotient is then divided by the other factor ( $351 \div 9$ )=39. This quotient is then factored further (39 = 3x13). Therefore, the four factors described are: 7, 9, 3, and 13