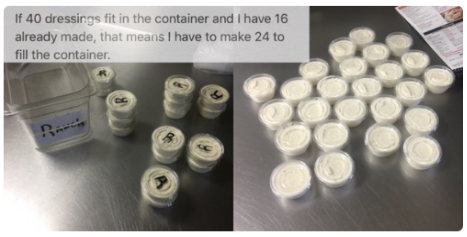
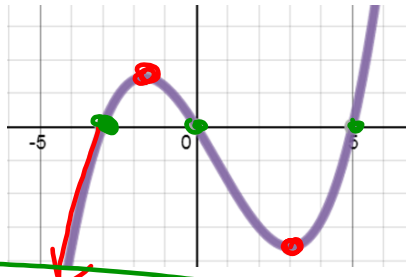
Happy Monday, September 26!



Homework on Desk!

Do Now:

1)-State the end behavior of the graph. How many turning points does it have?



Left: Down

Right: up

x=-3
x=5
x=0

x(x+3)(x-5)

~~x+0~~

Sep 21-8:30 PM

Learning Target:

Polynomial Division!!!!!!

Sep 26-10:14 AM

$345 \div 5$

What goes where?

$5 \cdot 69 = 345$

$5\overline{)345}$ → 69, -30, 45

Two Outcomes:

Perfectly divides (no remainder) -> divisor a factor!

Remainder -> divisor is NOT a factor

Sep 26-9:41 AM

5.4a- Dividing Polynomials

$42346 \div 3$

Long Division:

$3\overline{)42346} = 14115$, -3, 12, -12, 03, -3, 04, -3, 16, 15, 1

$14115 + \frac{1}{3}$

R1

Steps

1) Divide.
2) Multiply.
3) Subtract.
4) Bring Down
5) Repeat Steps 1-4 until out of numbers
6) Put your 'remainder' over your divisor**

**a remainder of zero means that the divisor is a factor of the dividend

Oct 31-2:48 AM

Practice:

$15\overline{)3045}$

203

$-30\downarrow$

04

-0

45

$1023 \div 10 = 102 + \frac{3}{10}$

$10\overline{)1023}$

102 R3

-10

02

-0

23

20

3

Sep 26-9:48 AM

Using this same logic... (Note: We only worry about the **FIRST** term when dividing, but when we multiply, we multiply by the whole divisor)

$x+3$

$x-5 \;\overline{)\; x^2-2x-15}$

$-x^2+5x$

$3x-15$

$-3x+15$

0

$3(x-5)$

$3x-15$

Oct 31-2:53 AM

Try: $a-10+\frac{-6}{a+2}$

$$a+2 \overline{)\, a^2-8a-26}$$

$a-10$

$-a^2-2a$

$0-10a-26$

$+10a+20$

-6

$a(a+2)$

a^2+2a

$-10(a+2)$

$-10a-20$

Oct 31-2:54 AM

Note: Put in 0 place holders for any/all missing degrees

$(27y^3-30y)\div(9y-6)$

$3y^2+2y-2$

$9y-6 \overline{)\, 27y^3+0y^2-30y+0}$

$-27y^3+18y^2$

$18y^2-30y$

$-18y^2+12y$

$-18y+0$

$+18y+6$

$+6$

Remainder = Not a factor

Oct 31-2:58 AM

Is x^2+1 a factor of P(x)=$3x^4-4x^3+12x^2+5$?

* $(3x^4-4x^3+12x^2+5) \div (x^2+1)$

have a remainder?

Yes! → Not a factor

No! → factor

Oct 31-3:01 AM

Is $x-2$ a factor of P(x)= x^5-32

Oct 31-3:05 AM

Exit Ticket:

How can you use division to figure out if a polynomial is a factor of another polynomial?

Sep 26-9:56 AM

Homework:

1) $(3x^3 + 9x^2 + 8x + 4) \div (x + 2)$ 2) $(x^3 - 13x - 12) \div (x\text{-}4)$

3) Decide whether each binomial is a factor of $x^3 + 4x^2 + x - 6$

a) $(x + 1)$ b) $(x + 3)$

Sep 26-9:51 AM

Homework: 5.4a pg 308 #13-16,17,19, 44-47

Divide using long division

13. $(3x^3 + 9x^2 + 8x + 4) \div (x + 2)$

14. $(9x^2 - 21x - 20) \div (x - 1)$

15. $(x^2 - 7x + 10) \div (x + 3)$

16. $(x^3 - 13x - 12) \div (x - 4)$

Determine whether each binomial is a factor of $x^3 + 4x^2 + x - 6$.

17. $x + 1$

19. $x + 3$

Divide.

44. $(2x^3 + 9x^2 + 14x + 5) \div (2x + 1)$

45. $(x^4 + 3x^2 + x + 4) \div (x + 3)$

46. $(x^5 + 1) \div (x + 1)$

47. $(x^4 + 4x^3 - x - 4) \div (x^3 - 1)$

Oct 5-7:16 AM