3-8 Synthetic Division and the Remainder & Factor Theorems

$(x \pm \#)$

x^2+4x-7 Can NOT do Synthetic

Oct 15-5:37 PM

Synthetic Division

- Synthetic division can be used to divide any polynomial by a divisor of the form x - k
- Write the ZERO of the divisor outside the box
- Write the coefficients of the dividend inside the box.
- Bring down the first term.
- Multiply the outside by the zero to get the number to put inside the box.
- Add the numbers on the inside of the box in columns.
- Write the outside numbers as your quotient with a remainder.

Oct 15-5:37 PM

Divide f (x)= $2x^3 + x^2 - 8x + 5$ by x + 3 using synthetic division.

Zero: -3

$-3 \mid 2 \;\; 1 \;\; -8 \;\; 5$

$\quad\quad\; -6 \;\; 15 \;\; -21$

$2 \;\; -5 \;\; 7 \;\; -16$

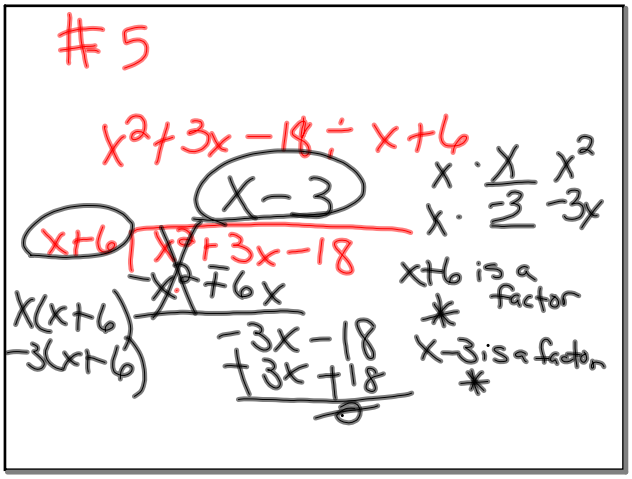
$2x^2 - 5x + 7 + \frac{-16}{x+3}$

Oct 15-5:37 PM

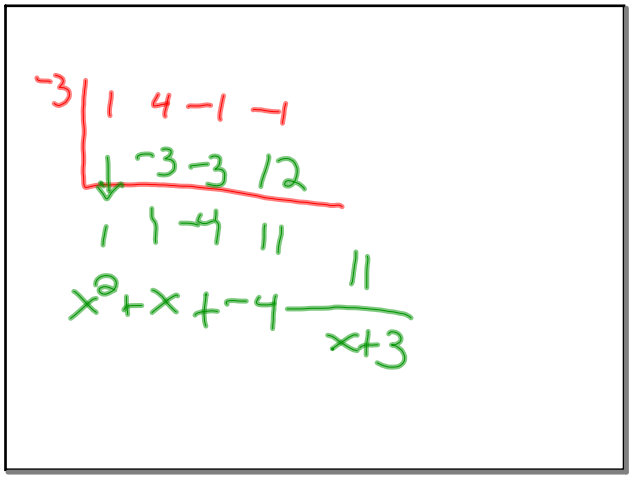
① Pg. 107 1-6all 7+8

② Binomial 8 done

Apr 19-11:26 AM



Apr 20-10:32 AM



Apr 19-2:26 PM

Login your clickers & yes calculators.

Get a piece of paper & the 3.8 w.s. (1/2 sheet) from the brown table.

Pick 4 long division problems & complete them.

Apr 20-9:28 AM

Factor a polynomial

Factor $f(x) = 3x^3 - 4x^2 - 28x - 16$ completely given that $x + 2$ is a factor.

Give all the factors

SOLUTION

Because $x + 2$ is a factor of $f(x)$, you know that $f(-2) = 0$. Use synthetic division to find the other factors.

−2	3	−4	−28	−16
		−6	20	16
	3	−10	−8	0

① Synthetic Division

-24 -12 2/3
-12 23
-10 -4 2/3
x 3x

New polynomial $3x^2 - 10x - 8$

Factored form including the give factor

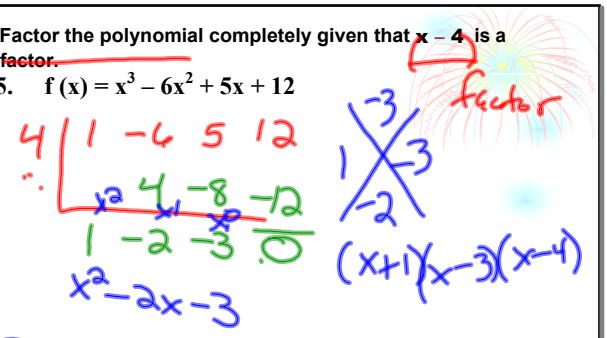
Factors to $(3x + 2)(x - 4)$

$(x + 2)(3x + 2)(x - 4)$

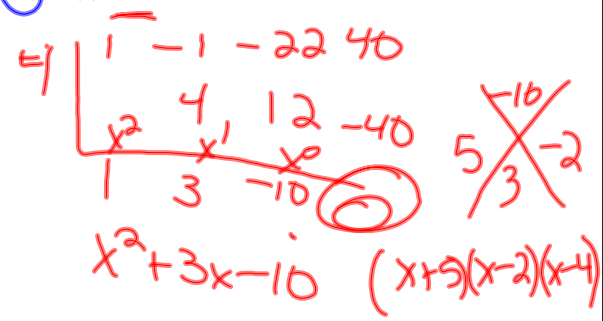
Oct 15-5:37 PM

Factor the polynomial completely given that x – 4 is a factor.

5. $f(x) = x^3 - 6x^2 + 5x + 12$



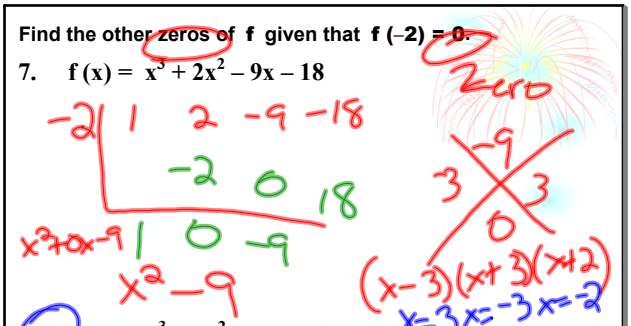
6. $f(x) = x^3 - x^2 - 22x + 40$



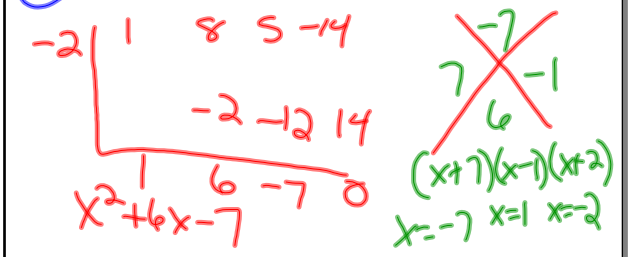
Oct 15-5:37 PM

Find the other zeros of f given that f (–2) = 0.

7. $f(x) = x^3 + 2x^2 - 9x - 18$



8. $f(x) = x^3 + 8x^2 + 5x - 14$

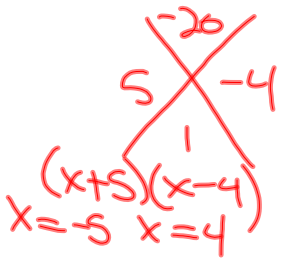


Oct 15-5:37 PM

1 Answer?

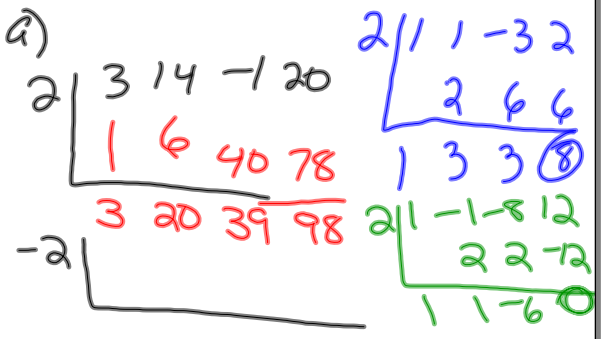
One zero of $f(x) = x^3 - 2x^2 - 23x + 60$ is $x = 3$. What is another zero of f?

Ⓐ −5 Ⓑ −4 Ⓒ 2 Ⓓ 5

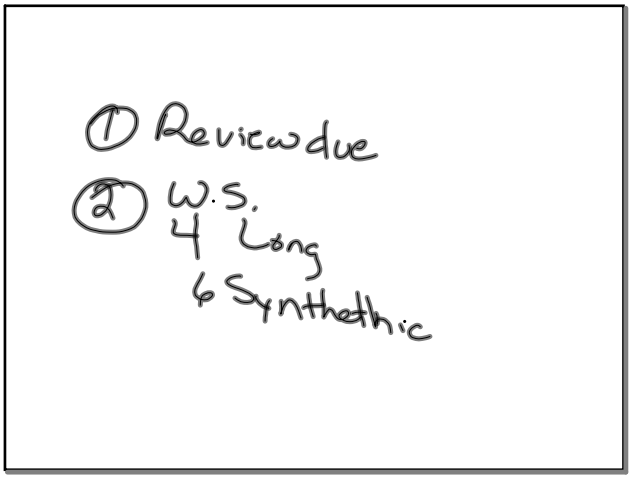


Apr 17-11:01 AM

a)



Apr 20-11:07 AM



Apr 20-11:27 AM