From yesterday, section 3.2:

11. $R(x) = -x^5 + 5x^3 - 4x$

$= -x(x^4 - 5x^2 + 4)$

$= -x(x^2 - 4)(x^2 - 1)$

$= -x(x+2)(x-2)(x+1)(x-1)$

43. $P(x) = x^4 - 3x^2 - 4$

$= (x^2 - 4)(x^2 + 1)$

$-4x^2$

$1x^2$

$0 = (x+2)(x-2)(x^2+1)$

$x = -2 \quad x = 2$

3.3 Notes: Dividing Polynomials

$2x^3 - 7x^2 + 5 \div x - 3$

Be sure to account for all possible exponents!!

rewrite: $x - 3\overline{)2x^3 - 7x^2 + 0x + 5}$

Use parentheses when subtracting!!

3.3 Notes: Dividing Polynomials

$2x^3 - 7x^2 + 5 \div x - 3$

rewrite: $x - 3 \overline{)\, 2x^3 - 7x^2 + 0x + 5}$

$2x^2 - x - 3$ r -4

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

$-x^2 + 0x$

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

$-3x + 5$

$-(-3x + 9)$

-4

Be sure to account for all possible exponents!!

Use parentheses when subtracting!!

3.3 Notes: Synthetic Division

(an alternative to dividing polynomials)

$2x^3 - 7x^2 + 5 \div x - 3$

rewrite: $x-3\overline{)2x^3 - 7x^2 + 0x + 5}$

or rewrite:

3	2	-7	0	5
	↓	6	-3	-9
	2	-1	-3	-4

add

multiply

quotient

remainder

Synthetic division: see video in ebook for more details

$2x^2 - x - 3$ remainder -4

Long Division

$$
\begin{array}{r}
2x^2 - x - 3 \\
x - 3 \overline{)\,2x^3 - 7x^2 + 0x + 5} \\
2x^3 - 6x^2 \\
\hline
-x^2 + 0x \\
-x^2 + 3x \\
\hline
-3x + 5 \\
-3x + 9 \\
\hline
-4
\end{array}
$$

Quotient

Remainder

Synthetic Division

$$
\begin{array}{r|rrrr}
3 & 2 & -7 & 0 & 5 \\
 & & 6 & -3 & -9 \\
\hline
 & 2 & -1 & -3 & -4
\end{array}
$$

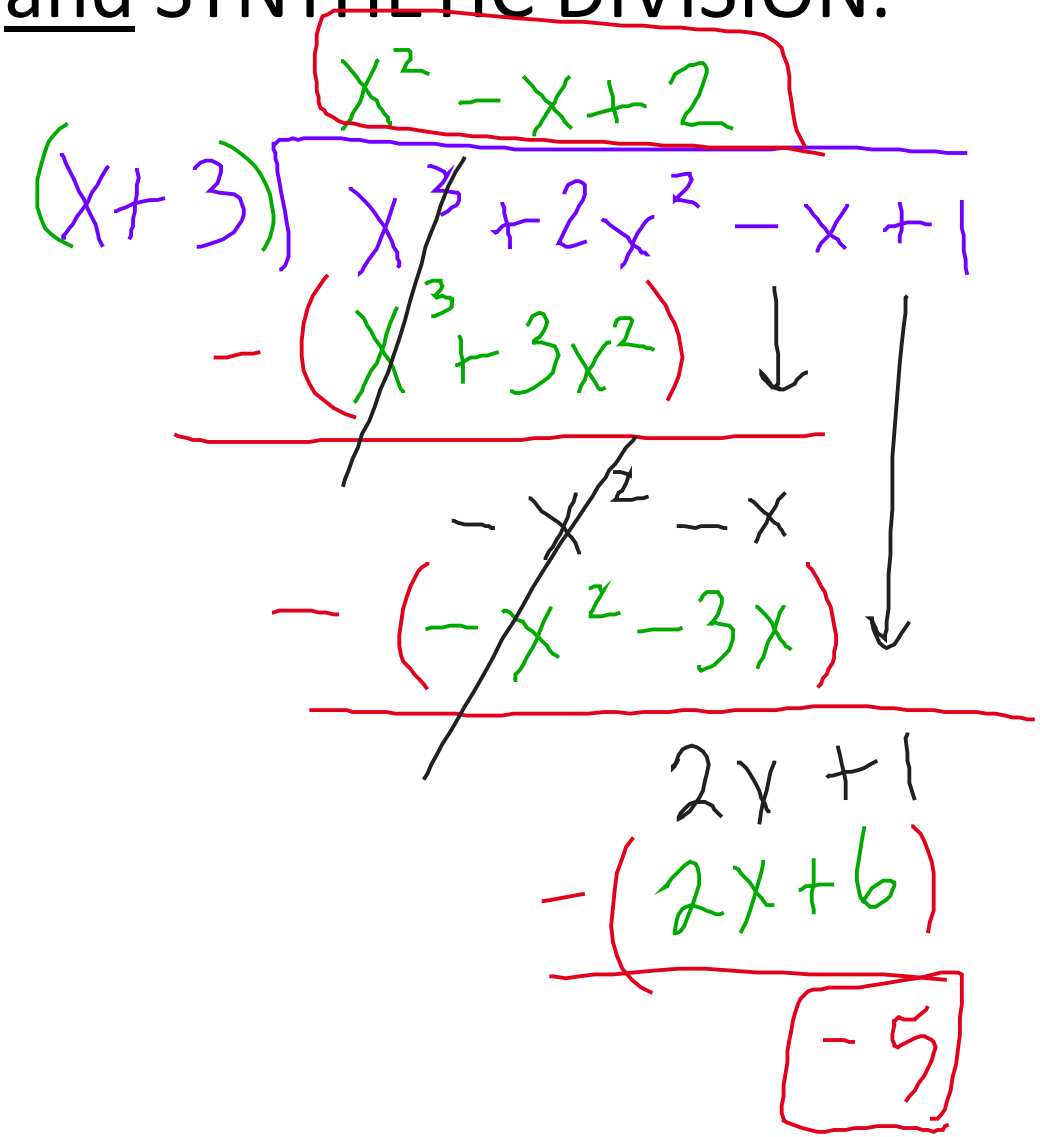
Quotient

Remainder

For #16,29,31, please be sure to solve for the quotient and remainder using LONG DIVISION and SYNTHETIC DIVISION.

16. Find the quotient and the remainder using LONG DIVISION and SYNTHETIC DIVISION.

$$\frac{x^3+2x^2-x+1}{x+3}$$



62. FACTOR THEOREM: Show that the given value(s) of c are zeros of P(x), and find all other zeros of P(x)

$$2x^4 - 13x^3 + 7x^2 + 37x + 15, \quad c = -1, 3$$