

5-4 Dividing Polynomials - Long Division

*It really is just like long division you learned in elementary school, but with variables.

**Be careful when subtracting negatives! --> Add!

Example: Use long division to divide the polynomials.

$$(x^3 + 4x^2 + 6) \div (x + 3)$$



Divide.

$$x + 2 \overline{) x^3 - 2x^2 - 5x + 6}$$

Questions?
Click Here



Useful for solving polynomials if factors are known.

$$\begin{aligned} x^3 - 2x^2 - 5x + 6 &= (x + 2)(x^2 - 4x + 3) \\ &= (x + 2)(x - 1)(x - 3) \end{aligned}$$

Practice with p. 308 #9-16

Divide using long division. Check your answers.

9. $(x^2 - 3x - 40) \div (x + 5)$

11. $(x^3 + 3x^2 - x + 2) \div (x - 1)$

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

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

10. $(3x^2 + 7x - 20) \div (x + 4)$

12. $(2x^3 - 3x^2 - 18x - 8) \div (x - 4)$

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

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