

R.3 Dividing Polynomials

We will be doing a quick review of long division since we need to know this when working with rational functions. To divide using long division we do the same steps as if we are working with numbers.

EXAMPLE: Divide by using long division: $(2x^2 + 3x - 35) \div (x + 5)$

EXAMPLE: Divide by using long division: $(3x^3 + x + 5) \div (x + 1)$

EXAMPLE: Divide by using long division: $(x + 3x^3 - x^2 - 2) \div (x^2 + 2)$

EXAMPLE: Divide by using long division: $(-3x^4 - 2x - 1) \div (x - 1)$

Synthetic Division is alternative to long division. It is used when dividing by something in the form $x -$ or $x +$ something. In all the problems in this section pertaining to synthetic division there will be a one in front of the x .

EXAMPLE: Divide using synthetic division: $(x^3 - 7x^2 - 13x + 15) \div (x + 2)$

EXAMPLE: Divide using synthetic division: $(3x^2 - 2x^3 + x^4 - 4) \div (x - 3)$

EXAMPLE: Divide using synthetic division: $(2x^5 - 6x^3 - 14x) \div (x - 2)$