

Dividing Polynomials

Simple Division:

Simplify $\frac{6r^2s^2 + 3rs^2 - 9r^2s}{3rs}$ --- each term in the numerator shares the denominator.

Rewrite the expression as a sum of quotients then simplify.

Examples:

1. $\frac{3a^2b + 6a^3b^2 + 18ab}{3ab}$

2. $\frac{12x^2y - 3x}{3x}$

Long Division

Examples:

3. $\frac{x^2 - 5x - 24}{x + 3}$

4. $(h^3 - 11h + 28)(h - 4)^{-1}$

Synthetic Division

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Steps to using Synthetic Division:

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Examples:

5. $(5x^4 - 4x^2 + x + 6) \div (x - 2)$

6. $(-5x^5 - 21x^4 - 3x^3 + 4x^2 - 2x + 2) \div (x + 4)$

7. $(6x^2 - 2x + 4) \div (2x - 3)$

8. $(x^3 - x^2 + 2x - 7) \div (2x - 1)$