



Ch 4 Review

4.4 - Factoring Polynomials

Practice: Factoring

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1. $3x^6 - 2x^3 - 1$

$$(3x^3 + 1)(x - 1)(x^2 + x + 1)$$

2. $\frac{2}{y^4} - \frac{3}{y^2} + 1$

$$\left(\frac{2}{y^2} - 1\right)\left(\frac{1}{y} - 1\right)\left(\frac{1}{y} + 1\right)$$

4.2 - Adding, Subtracting, and Multiplying Polynomials

Practice: Binomial Theorem

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1. $(x + 2y)^4$

$$x^4 + 8x^3y + 24x^2y^2 + 32xy^3 + 16y^4$$

2. $(2x - 3y)^{14}$

Find y^3 term

$$-20,127,744x^{11}y^3$$

4.5 - Solving Polynomial Equations

Practice: Rational Root Theorem

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List all possible rational roots, then solve.

$$2x^4 + 9x^3 + 15x^2 + 6x - 8 = 0$$

$$\frac{p}{q} = \pm \left\{ 1, 2, 4, 8, \frac{1}{2} \right\}$$

$$\text{Roots} = \left\{ -2, \frac{1}{2}, \frac{-3 \pm i\sqrt{7}}{2} \right\}$$

4.3 - Dividing Polynomials

Practice: Synthetic Division

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$$(2x^4 + 9x^3 + 15x^2 + 6x - 8)/(x - 3)$$

$$2x^3 + 15x^2 + 60x + 186 + \frac{550}{x - 3}$$

4.3 - Dividing Polynomials

Practice: Long Division

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$$(2x^4 + 9x^3 + 15x^2 + 6x - 8)/(x^2 + x - 3)$$

$$2x^2 + 7x + 14 + \frac{13x + 34}{x^2 + x - 3}$$

