Math 160 - Zeros of Polynomials

1 Long Division

Perform the indicated polynomial long division.

1. $\frac{x^4-8x^3+17x^2-7x+3}{x-3}$
2. $\frac{x^4-5}{x+2}$
3. $\frac{x^4+x^3-7x^2-5x+10}{x-\sqrt{5}}$
4. $\frac{x^4-2x^3+7x^2-8x+12}{x-2i}$

2 Synthetic Division

Perform the indicated operation using synthetic division.

1. $\frac{x^4-8x^3+17x^2-7x+3}{x-3}$
2. $\frac{x^4-5}{x+2}$
3. $\frac{x^4+x^3-7x^2-5x+10}{x-\sqrt{5}}$
4. $\frac{x^4-2x^3+7x^2-8x+12}{x-2i}$

3 Finding the Zeros

Find all zeros of the indicated polynomial.

1. $4x^4 - 20x^3 + 35x^2 - 25x + 6$
2. $x^3 + 4x^2 + 10x + 12$
3. $2xx^3 - 3x^2 + 8x - 12$
4. $4x^{10} - 37x^8 + 9x^6 - 4x^4 + 37x^2 + 9$
5. $x^7 + 4x^6 + 7x^5 + 11x^4 - 8x^3 - 15x^2$