Answers

Pre-Calculus
Finding All Complex Roots

Find all the zeros of each of the following polynomials.

1) $f(x) = x^3 - 64$

$\{2, -1 \pm i\sqrt{3}\}$

2) $g(x) = x^4 + 3x^3 - 13x^2 - 15x$

$\{-5, -1, 0, 3\}$

3) $h(x) = x^3 + 9x^2 + 23x + 15$

$\{-5, -3, -1\}$

4) $p(x) = x^3 - 3x^2 - 9x + 27$

$\{3 \text{ mult } 2, -3\}$

5) $g(x) = x^4 + 8x^2 - 48$

$\{\pm 2, \pm 2i\sqrt{3}\}$

6) $f(x) = 27x^3 + 8$

$\left\{-\frac{2}{3}, \frac{1 \pm \sqrt{3}}{3}\right\}$

7) $f(x) = 4x^3 - 6x^2 + 1$

$\left\{\frac{1}{2}, \frac{1 \pm \sqrt{3}}{2}\right\}$

8) $g(x) = x^4 - 5x^3 + 7x^2 - 15x + 12$

$\{1, 4, \pm i\sqrt{3}\}$

9) $j(x) = x^3 + 5x^2 - 7x - 35$

$\{-5, \pm\sqrt{7}\}$

10) $g(x) = 3x^3 - 5x^2 - 8x - 2$

$\left\{-\frac{1}{3}, 1 \pm \sqrt{3}\right\}$

11) $m(x) = 4x^3 - 16x^2 + 5x - 20$

$\left\{4, \pm \frac{i\sqrt{5}}{2}\right\}$

12) $f(x) = 2x^4 - 2x^3 + 6x^2 + 10x$

$\{0, -1, 1 \pm 2i\}$