

Name: _____

Zeros of Polynomial Functions

1) Find all the rational zeros of the polynomial function

1) $P(x) = x^4 - \frac{25}{4}x^2 + 9$

2) $P(x) = x^3 - \frac{1}{4}x^2 - x + \frac{1}{4}$

3) $f(z) = z^3 - \frac{11}{6}z^2 - \frac{1}{2}z - \frac{1}{3}$

4) $P(x) = x^3 - \frac{3}{2}x^2 - \frac{23}{2}x + 6$

2) For each of the following polynomials find the factors and the roots

1) $p(x) = x^3 - 3x^2 + 5x - 6$

2) $p(x) = x^3 + 3x^2 - 9x + 5$

3) $p(x) = 6x^3 - x^2 - 2x$

4) $p(x) = 4x^3 - 7x^2 - 14x - 3$

3) Find all the real zeros of the function

1) $f(x) = x^3 - 6x^2 + 11x - 6$

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

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

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

5) $h(t) = t^3 + 12t^2 + 21t + 10$

6) $f(x) = 3x^3 - 19x^2 + 33x - 9$

7) $C(x) = 9x^4 - 9x^3 - 58x^2 + 4x + 24$

8) $C(x) = 2x^4 - 15x^3 + 23x^2 + 15x - 25$

4) Find all real solutions of polynomial equation

1) $z^4 - z^3 - 2z - 4 = 0$

2) $x^4 - 13x^2 - 12x = 0$

3) $2y^4 + 7y^3 - 26y^2 + 23y - 6 = 0$

4) $x^5 - x^4 - 3x^3 + 5x^2 - 2x = 0$

5) Use the zero to find the zeros of the functions

	Function	Zero
1)	$f(x) = 2x^3 + 3x^2 + 50x + 75$	$5i$
2)	$f(x) = x^3 + x^2 + 9x + 9$	$3i$
3)	$f(x) = 2x^4 - x^3 + 7x^2 - 4x - 4$	$2i$
4)	$f(x) = x^3 - 7x^2 - x + 87$	$5 + 2i$
5)	$f(x) = x^4 + 3x^3 - 5x^2 - 21x + 22$	$-3 + \sqrt{2}i$

6) Find the factors of the following polynomials

1) $3x^3 - 8x^2 - 5x + 6$

2) $2x^3 + 5x^2 - 3x$

3) $x^3 - 4x^2 + 6x - 2$

4) $x^3 + 6x^2 + 12x + 8$