

Theorem - _____

_____Corollary - _____

1) Determine the amount of solutions/zeros for each

$$x^3 + 3x^2 + 16x + 48 = 0$$

$$f(x) = x^4 + 6x^3 + 12x^2 + 8x$$

Find the values of the zeros for the following polynomial

$$f(x) = x^5 + x^3 - 2x^2 - 12x - 8$$

Complex conjugates -

Complex Conjugates Theorem -

3) Write a polynomial function "f" of least degree that has rational coefficients, a leading coefficient of 1 and the zeros 2 and $3+i$.

Descartes's Rule of Signs -

4) Determine the possible number of positive real zeros, negative real zeros, and imaginary zeros for the following polynomial.

$$f(x) = x^6 - 2x^5 + 3x^4 - 10x^3 - 6x^2 - 8x - 8$$

⊕ real zeros	⊖ real zeros	Imaginary zeros	Total zeros

Exercises

Identify the number of solutions/zeros

3. $x^4 + 2x^3 - 4x^2 + x = 0$

5. $9t^6 - 14t^3 + 4t - 1 = 0$

7. $g(s) = 4s^5 - s^3 + 2s^7 - 2$

Find all the zeros of the polynomial function

9. $f(x) = x^4 - 6x^3 + 7x^2 + 6x - 8$

11. $g(x) = x^4 - 9x^2 - 4x + 12$

13. $g(x) = x^4 + 4x^3 + 7x^2 + 16x + 12$

Write a polynomial function "f" of least degree that has rational coefficients, a leading coefficient of 1, and the given zeros.

21. $-5, -1, 2$

23. $3, 4 + i$

25. $4, -\sqrt{5}$

Determine the possible number of positive real zeros, negative real zeros and imaginary zeros for the function.

33. $g(x) = x^4 - x^2 - 6$

35. $g(x) = x^3 - 4x^2 + 8x + 7$

37. $g(x) = x^5 - 3x^3 + 8x - 10$

Answer Key

4.6 Monitoring Progress and Modeling with Mathematics (pp. 202–204)

3. 4 5. 6 7. 7 9. -1, 1, 2, and 4
11. -2, -2, 1, and 3 13. -3, -1, 2i, and -2i
21. $f(x) = x^3 + 4x^2 - 7x - 10$
23. $f(x) = x^3 - 11x^2 + 41x - 51$
25. $f(x) = x^3 - 4x^2 - 5x + 20$

33.

Positive real zeros	Negative real zeros	Imaginary zeros	Total zeros
1	1	2	4

35.

Positive real zeros	Negative real zeros	Imaginary zeros	Total zeros
2	1	0	3
0	1	2	3

37.

Positive real zeros	Negative real zeros	Imaginary zeros	Total zeros
3	2	0	5
3	0	2	5
1	2	2	5
1	0	4	5