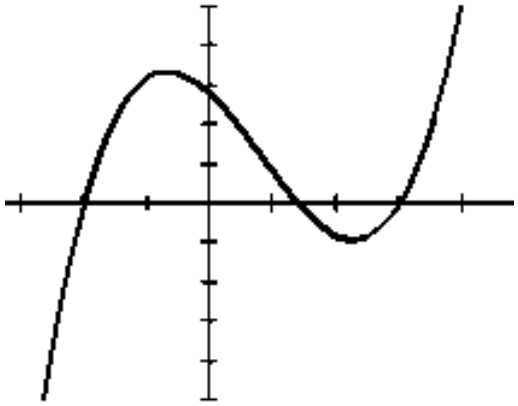
What you'll Learn About

Use the graph to guess possible linear factors of f(x). Then completely factor f(x) with the aid of synthetic division.

$f(x) = 5x^3 – 12x^2 - 23x + 42$



Find the polynomial function with leading coefficient 4 that has the given degree and zeros.

A) Degree 3,with 2, -1, and 4 as zeros

Find the polynomial function with leading coefficient 4 that has the given degree and zeros.

B) Degree 3 with 5, 1/3, and 2/3 as zeros

Using only algebraic methods, find the cubic function with the given table of values

x	-4	0	3	5
f(x)	0	180	0	0

	Use the Rational Zeros Theorem to write a list of all potential rational zeros and then determine which ones, if any, are zeros. $f(x) = 3x^3 + 4x^2 – 5x – 2$ Use the Rational Zeros Theorem to write a list of all potential rational zeros and then determine which ones, if any, are zeros. $f(x) = x^3 - 3x^2 + 1$

Finding Rational Zeros 1) List all possible rational zeros p/q where q is the leading coefficient and p is the constant 2) Use your calculator to find the zeros and then use synthetic division and algebra to prove that the zeros that you chose are rational zeros	Find all of the real zeros of the function, finding exact values whenever possible. Identify each zero as rational or irrational. 52. $f(x) = x^3 - 6x^2 + 7x + 4$ Find all of the real zeros of the function, finding exact values whenever possible. Identify each zero as rational or irrational. $f(x) = 2x^4 - 7x^3 - 8x^2 + 14x + 8$

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

A) Prove that all of the real zeros of $f(x) = 2x^4 - 7x^3 - 8x^2 + 14x + 8$ must lie in the interval [-2, 5]

What you'll Learn About

Write the polynomial in standard form, and identify the zeros of the function and the x-intercepts.

a) $(x - 4i)(x + 4i)$

b) $(x - 3)(x - \sqrt{4}i)\ (x + \sqrt{4}i)$

c) $x(x - 3)(x - 2 - i)\ (x - 2 + i)$

	Write a polynomial function of minimum degree in standard form with real coefficients whose zeros include those listed. a) 2, 5i, and -6i b) -2, 3, and 2 – i c) -4, 2 + 3i

	Write a polynomial function of minimum degree in standard form with real coefficients whose zeros and their multiplicities include those listed. Then sketch a graph and discuss what you notice. a) 3 (multiplicity 2), - 4 (multiplicity 3) b) 3 (multiplicity 3), - 4 (multiplicity 1) c) 5 (multiplicity 2), $2 + i$ (multiplicity 1)

Find all of the zeros and write a linear factorization of the function

28) $f(x) = x^3 - 10x^2 + 44x - 69$

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

	Using the given zero find all of the zeros and write a linear factorization 33) $f(x) = x^4 - 2x^3 - x^2 + 6x - 6$ zero: $1 + i$ Write the function as a product of linear and irreducible quadratic factors all with real coefficients. 42) $f(x) = x^4 - 2x^3 + x^2 - 8x - 12$