Polynomial functions

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 where n is a nonnegative integer and the coefficients

 (an, an-1, an-2, . . . , a2, a1, a0) are real numbers

Decide whether each of the following is a polynomial function.

 f(x) = 2x – 3x4   

 F(x) = 2x + 1 G(x) = 2x-1 H(x) = 12

 y = -12x g(x) = 0 T(x) = -2x3(3x – 1)2

 Degree Leading term Leading coefficient

Monomial

Binomial

Trinomial

Power functions f(x) = axn

 n even, a > 0 a < 0 n odd, a > 0 a < 0

Graph the following using transformations.

 f(x) = 1 – x3  g(x) = 2(x–2)4 + 3



Zeros r is a zero of a function if f(r) = \_\_\_\_\_

 If r is real, then r is an \_\_\_\_\_\_\_\_\_\_\_ of the graph of f and x – r is a \_\_\_\_\_\_\_\_\_\_ of f(x).

Multiplicity

 Odd Even

Find a polynomial function of degree 3 whose zeros are 1, 3, and -2.

Find a polynomial function of degree 4 whose zeros are 0, -1, and 2 (multiplicity 2).

Identify the zeros and multiplicity for

 f(x) = 5(x + 2)2(x – 1)4(x – 3)3(x + 4)

Draw a complete graph. Include x- and y-intercepts and maximum and minimum (turning) points.

 f(x) = x2(x – 4) f(x) = x3 + x2 – 6x



Draw a complete graph. Include x- and y-intercepts and maximum and minimum (turning) points.

 f(x) = x(x – 3)2(x + 2) f(x) = x2(x2 + 1)(x + 4)



Cubic regression

Volume of a box project