1. Find all values of x such that f(x) < 0.

f(x) = 9x – x3

1. Find all values of x such that f(x) < 0.

f(x) = x3 + 6x2 – 16x – 96

1. Find all values of x such that f(x) > 0.

f(x) = x2(x+8)(x-2)2(x-8)

1. Let f(x) be a polynomial such that the coefficient of every even power of x is 0. Is *f* an even or odd function?
2. If f(x) = 5x3 – kx2 + x – 11k, find a number k such that the graph of *f* contains the point (-1,22).
3. If one zero of f(x) = x3 – 11x2 – kx + 144 is -3, find two other zeros.
4. A herd of 425 deer is introduced onto a small island. At first, the herd increases rapidly, but eventually food resources dwindle and the population declines. Suppose that the number of deer after t years is given by N(t) = -t4 + 8t2 + 425, where t>0. When does the population become extinct?
5. Find the quotient and remainder if f(x) is divided by p(x).

f(x) = 9x4 – x3 – 6x2 + 5x – 5;

p(x) = x2 – 3

1. Decide whether x – c is a factor of

f(x) = x12 – 1

c=-4

1. Find a polynomial with leading coefficient 1 and having the degree 3 and zeros -3, 0, 8.
2. Use synthetic division or substitution to find f(c).

f(x) = 9x3 + 8x2 – 3x + 2

c = 2

1. Find all values of k such that f(x) is divisible by the given linear polynomial.

f(x) = kx3 + x2 + k2x + 3k2 + 11

x+2

1. Find the zeros of f(x), and state the multiplicity of each zero.

f(x) = x4 + 32x2 – 144

1. Determine the number of positive, negative, and imaginary solutions of the equation.

2x3 + 3x2 + 1 = 0