

Find the zeros of the polynomial function and state the multiplicity of each.

28. $f(x) = (x+5)^3(x-4)(x+1)^2$ Zeros: -5, 4, -1
 Mult: 3 1 2

31. $f(x) = (x^2 - 9)^3 = [(x+3)(x-3)]^3 = (x+3)^3(x-3)^3$ Zeros: -3, 3
 Mult: 3 3

36. $f(x) = (x^2 - 5x + 6)^2 = [(x-2)(x-3)]^2 = (x-2)^2(x-3)^2$ Zeros: 2, 3
 Mult: 2 2

38. $f(x) = x^4 - 10x^2 + 9 = (x^2 - 9)(x^2 - 1) = (x+3)(x-3)(x+1)(x-1)$ Zeros: -3, 3, -1, 1
 Mult: 1 1 1 1

42. $f(x) = 3x^3 + x^2 - 48x - 16$
 $\frac{x^2(3x+1) - 16(3x+1)}{GCF = 3x+1} = (3x+1)(x^2 - 16) = (3x+1)(x+4)(x-4)$ Zeros: $-\frac{1}{3}, -4, 4$
 Mult: 1 1 1

Using a graphing calculator, estimate the real zeros, the relative maxima and minima, and the range of the polynomial function.

54. $h(x) = 2x^3 - x^4 + 20$



