

State the degree and list the zeros of the polynomial function. State the multiplicity of each zero and whether the graph crosses the x-axis at the corresponding x-intercept. Find the y-intercept and sketch a graph.

a.  $f(x) = 3x(-3x - 4)^2$

b.  $g(x) = (x - 1)(x + 3)^3(x - 7)^2$

c.  $h(x) = x(2x + 3)^4(x + 5)^2$

d.  $f(x) = (x - 1)(-x + 9)^3(x + 3)^4$

Without using a calculator, write a rule and sketch a graph for the following: A cubic function that has zeroes only at  $(-4, 0)$  and  $(8, 0)$ .

Without using a calculator, write a rule and sketch a graph for the following: A quartic function that has zeroes only at  $(-8, 0)$ ,  $(-1, 0)$  and  $(5, 0)$ .