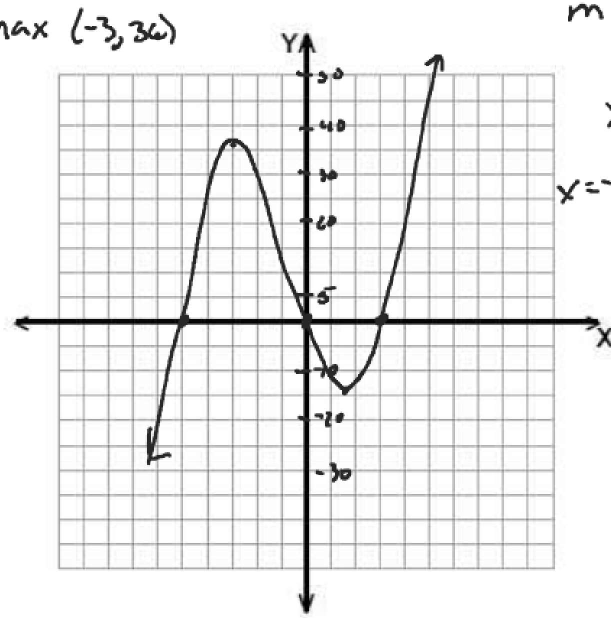
c. Identify the degree of $q(x)$. How could you have predicted that property of the polynomial before any algebraic manipulation?

d. Graph $q(x)$ and label the x-intercepts, y – intercepts, and local extrema.

max (-3, 36)

min (1.67, -14.81)



X-intercepts

x = -5, 0, 3

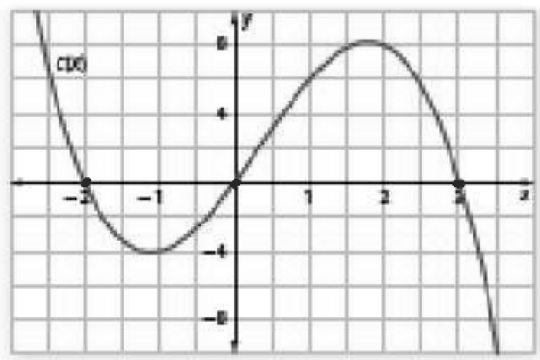
Y-intercept

(0, 0)

$X=0$ $X=-2$ $X=3$

X $X+2$ $X-3$

The graph below is a polynomial function *c(x)*.



a. What is the degree of *c(x)*? Explain how you know.

Degree = 3

3 Zeros or 2 turning Points (Extrema)

b. Use the information from the graph to write a possible rule for *c(x)*. Express the rule in equivalent factored form and standard polynomial form.

$C(x) = x(x+2)(x-3)$

$x(x^2-x-6)$

$C(x) = x^3 - x^2 - 6x$

c. Use you calculator to graph the rule from Part b. If needed adjust the rule to give a better fit.

$C(x) = -x(x+2)(x-3)$

$-x^3 + x^2 + 6x$

Looking back at problems 1-3, how can you tell the zeros of a polynomial function when its rule is written as a product of linear factors?

$C(x) = -x(x+2)(x-3)$

Looking back at problems 1-3, how can you tell the degree of a polynomial function when its rule is written as a product of linear factors?

Which properties of a polynomial and its graph are shown best when the rule is written as a product of linear factors? When the rule is written in standard form?

$f(x) = a(x-p)(x-q)$

x-intercepts

$f(x) = ax^3+bx^2+cx+d$

y-intercept

Multiply each set of polynomials. Write them in standard form. Give the degree of the product.

$(2x-3)(4x-1)$

$2(3x-7)(x+5)$

$x(x+6)(x-2)$

$(x-3)(x+4)(x-5)$

$(3x-1)(x^2+2x-2)$

$(x-4)(x^4-3x^2+2)$