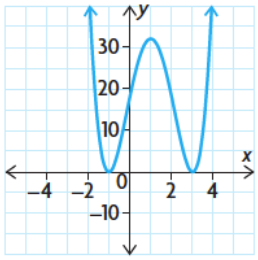
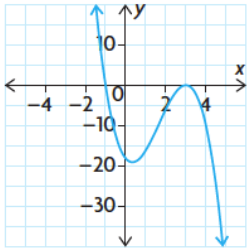
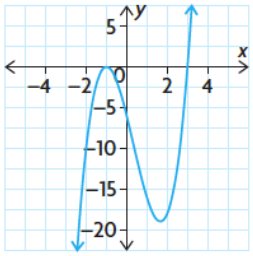
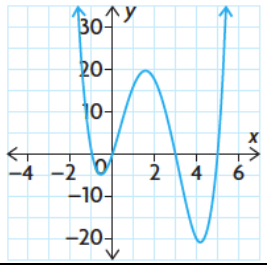
W3 – 1.3 – Factored Form Polynomial Functions
MHF4U

1) Match each equation with the most suitable graph. Write the letter of the equation beneath the matching graph.

A) $f(x) = 2(x+1)^2(x-3)$ **B)** $f(x) = (x+1)^2(x-3)^2$

C) $f(x) = -2(x+1)(x-3)^2$ **D)** $f(x) = x(x+1)(x-3)(x-5)$

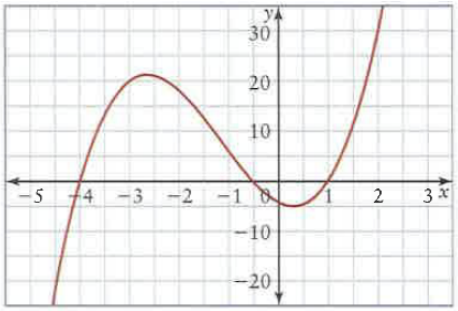
2) Complete the table

Equation	Degree	Leading Coefficient	End Behaviour	x-intercepts
$f(x) = (x-4)(x+3)(2x-1)$				
$g(x) = -2(x+2)(x-2)(1+x)(x-1)$				
$h(x) = (3x+2)^2(x-4)(x+1)(2x-3)$				
$p(x) = -(x+5)^3(x-5)^3$				

3) For each graph, state…

i) the least possible degree and the sign of the leading coefficient
ii) the x-intercepts (specify order of zero) and the factors of the function
iii) the intervals where the function is positive/negative

a)



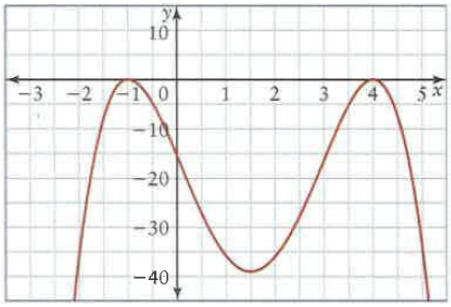
i) degree:
leading coefficient:

ii) x-intercepts:
factors:

iii)

Interval				
Sign				

b)



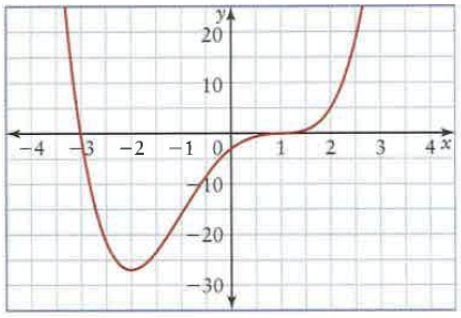
i) degree:
leading coefficient:

ii) x-intercepts:
factors:

iii)

Interval			
Sign			

c)



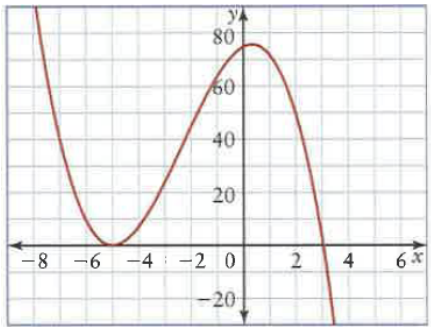
i) degree:
leading coefficient:

ii) x-intercepts:
factors:

iii)

Interval			
Sign			

d)



i) degree:
leading coefficient:

ii) x-intercepts:
factors:

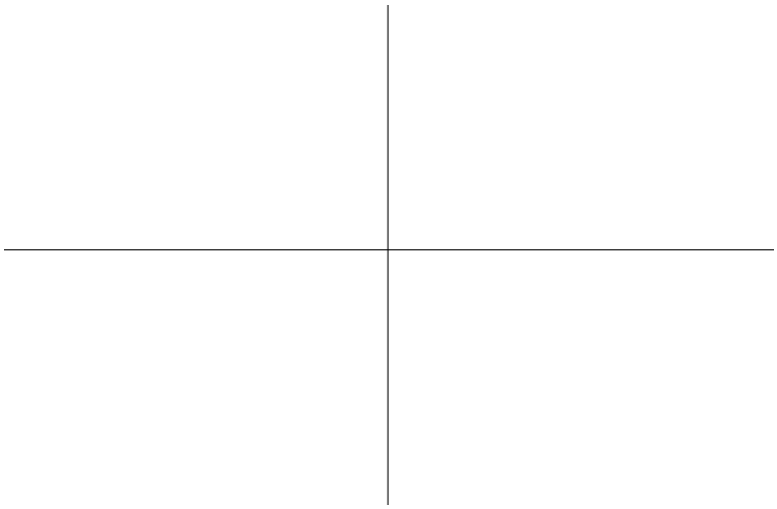
iii)

Interval			
Sign			

4) For each function, complete the chart and sketch a possible graph of the function labelling key points.

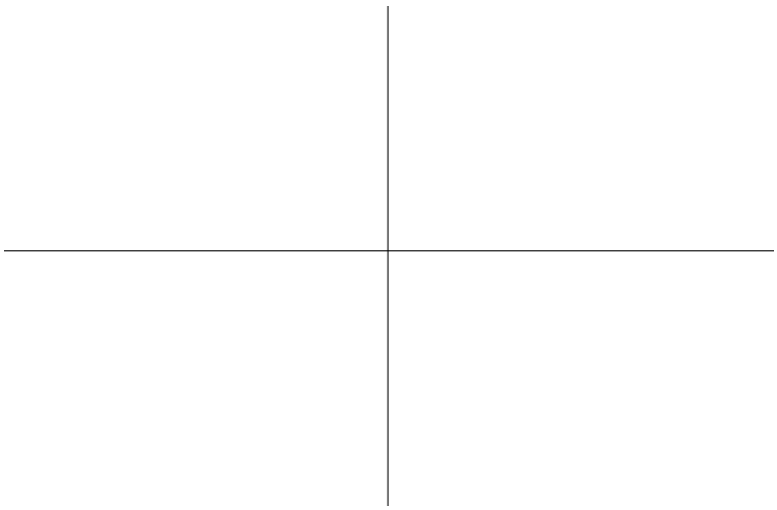
a) $f(x) = -2(x-3)(x+2)(4x-3)$

Degree	Leading Coefficient	End Behaviour	x-intercepts	y-intercept



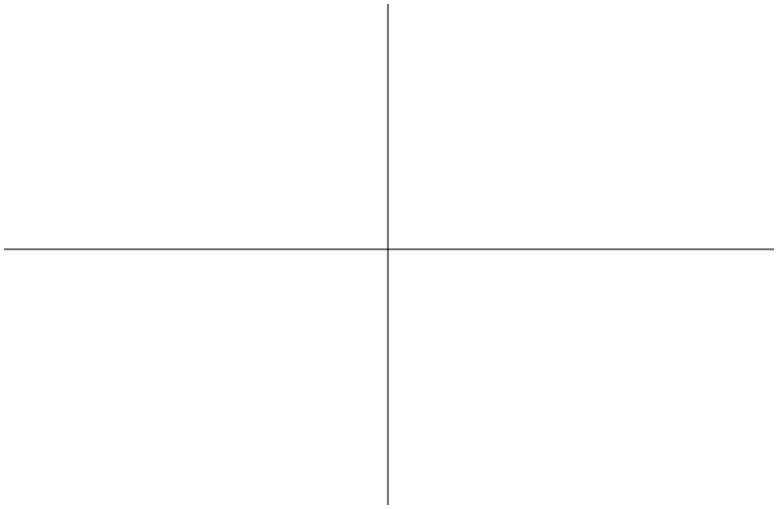
b) $g(x) = (x-1)(x+3)(1+x)(3x-9)$

Degree	Leading Coefficient	End Behaviour	x-intercepts	y-intercept



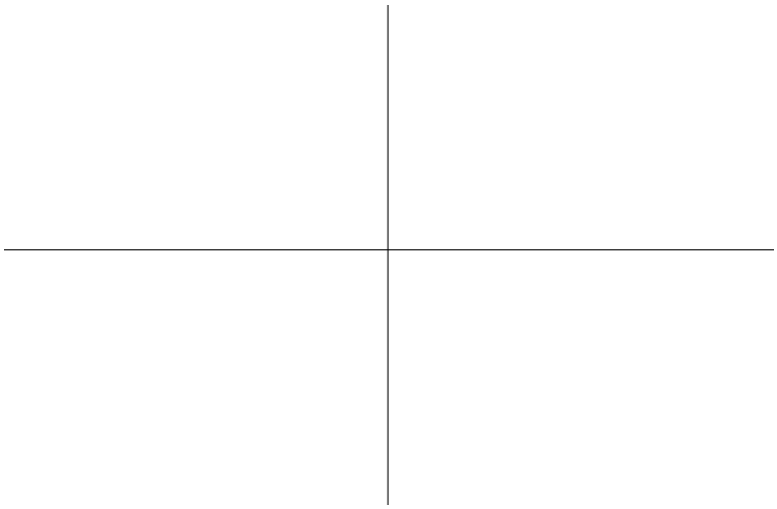
c) $h(x) = -(x+4)^2(x-1)^2(x+2)(2x-3)$

Degree	Leading Coefficient	End Behaviour	x-intercepts	y-intercept



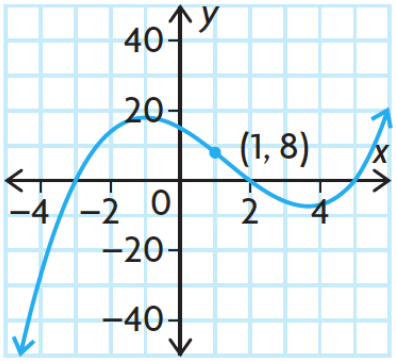
d) $p(x) = 3(x+6)(x-5)^2(3x-2)^3$

Degree	Leading Coefficient	End Behaviour	x-intercepts	y-intercept

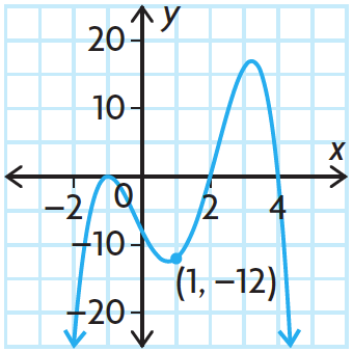


5) Write the equation of each function

a)



b)



6) Determine an equation for a quintic function with zeros -1 (order 3) and 3 (order 2) that passes through the point (-2, 50)

7) Determine the zeros of $f(x) = (2x^2 - x - 1)(x^2 - 3x - 4)$