BSc Software Design (Game & Web) Year 1
Tutorial 2

Graphs of functions\turning points

For each of the following functions:

(a) Graph the function in the region specified
(b) Estimate from the graph where the function crosses the *x* axis
(c) Compare this with the zeroes calculated from the relevant equations
(d) Determine how many turning points the graph of the function has

(i) $f(x) = 2x - 5$ on [0,6]

(ii) $f(x) = 4x + 7$ on [-3,2]

(iii) $f(x) = 2x^2 - 5x + 2$ on [-1,3]

(iv) $f(x) = x^2 - 3x - 2$ on [-2,5]

(v) $f(x) = (x-1)(2x^2 + 3x - 4)$ on [-4,2]

(vi) $f(x) = (x+2)(x^2 - 2x - 5)$ on [-3,5]

Tangent Curve Slopes

Estimate the slope of the tangent curve to the following functions at the specified point:

(i) $f(x) = x^2 + 2x - 5$ at x_1=2

(ii) $f(x) = 2x^2 - 5x + 4$ at x_1=1

(iii) $f(x) = x^2 + 5x - 9$ at x_1=-1

(iv) $f(x) = 4x^2 - 8x - 9$ at x_1=-2

(v) $f(x) = -x^3 + 9x$ at x_1=3

HINT: Tabulate as below for Δx=1, 0.5, 0.2, 0.1, 0.05, ..., 0.001

Δx	x_1	$x_2 = x_1 + \Delta x$	$y_1 = f(x_1)$	$y_2 = f(x_2)$	Slope (m)
1					
0.5					
0.2					
0.1					