CfE Higher Homework (12)

(1) A curve has equation $y = x^4 - 4x^3 + 3$.

(a) Find algebraically the coordinates of the stationary points. 6

(b) Determine the nature of the stationary points. 2

(2) A curve has equation $y = 2x^3 + 3x^2 + 4x - 5$.

Prove that this curve has no stationary points. 5

(3) For what values of x is the function $f(x) = \frac{1}{3}x^3 - 2x^2 - 5x - 4$ increasing? 5

(4) Find the exact solutions of the equation $4\sin^2 x = 1$, $0 \leq x < 2\pi$. 4

(5) Solve $2\sin 3x^\circ - 1 = 0$ for $0 \leq x \leq 180$. 4

(6) Find, correct to one decimal place, the value of x between 180 and 270 which satisfies the equation $3\cos(2x^\circ - 40^\circ) - 1 = 0$. 5