Higher Maths – End of Course Assessment 2009/2010 (Answers + Marking Scheme)

Paper 1

Section A - Answers

1	D	2	C	3	C	4	B		
5	D	6	A	7	B	8	C	9 B	10 C

2 marks each (20 marks)

Section B - Marking Scheme

Give 1 mark for each •	Illustration(s) for awarding each mark

11(a) ans: $k = 64;\ n = 3$ **(4 marks)**

•1 prepares to differentiate	•1 $f(x) = -16(2x-1)^{-2}$
•2 starts to differentiate	•2 $f'(x) = 32(2x-1)^{-3}$.....
•3 completes differentiation	•3 .....×2
•4 simplifies and states values of k and n	•4 $f'(x) = \dfrac{64}{(2x-1)^3};\ k = 64;\ n = 3$

(b) ans: $x = \dfrac{5}{2}$ **(3 marks)**

•1 equates derivative to 1	•1 $\dfrac{64}{(2x-1)^3} = 1$
•2 starts to simplify	•2 $(2x-1)^3 = 64$
•3 completes simplification	•3 $(2x-1) = 4;\ x = \dfrac{5}{2}$

12(a) ans: *(-1,1) (5,3)* **(5 marks)**

•1 expresses x in terms of y	•1 $x = 3y - 4$
•2 substitutes into equation of circle	•2 $(3y-4)^2 + y^2 - 2(3y-4) - 10y + 6 = 0$
•3 form quadratic	•3 $10y^2 - 40y + 30 = 0$
•4 solve for y	•4 $y = 1, 3$
•5 solve for x and state points	•5 (-1,1) and (5,3)

(b) ans: $(x-2)^2 + (y-2)^2 = 10$ **(3 marks)**

•1 finds centre	•1 (2,2)
•2 Calculates radius	•2 $r = \sqrt{10}$
•3 gives eqaution	•3 $(x-2)^2 + (y-2)^2 = 10$

(c) ans (0,4) is inside the circle **(2 marks)**

•1 substitutes in to equation	•1 $(0-2)^2 + (4-2)^2$
•2 conclusion by comparison with radius	•2 $8 < 10$

Total 17 marks

Total for Paper 1 - 37 marks