1.14 Pure: Differentiation Depth: 10-minute Pack

EDEXCEL 9MA0 · Calculator allowed · about 10 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 A curve has parametric equations $x = t^2 - 1$, $y = 3t - t^3$, for t in R.

(a) Find dy/dx in terms of t. **(3)**

(b) Find the value of dy/dx when t = 2. **(2)**

(Total for Question 1 is 5 marks)

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2 A curve C has equation $x^2 + y^2 + 6x - 4y = 12$. Show that $dy/dx = -(x+3)/(y-2)$.

(Total for Question 2 is 3 marks)

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Mark scheme · 1.14 Pure: Differentiation Depth: 10-minute Pack

Question 1

(a) $dx/dt = 2t$	**M1**
(a) $dy/dt = 3 - 3t^2$	**M1**
(a) $dy/dx = (3-3t^2)/(2t)$ oe cao, e.g. $3(1-t^2)/(2t)$	**A1**
(a) Answer: $dy/dx = (3 - 3t^2)/(2t)$	
(b) substitute t=2 into their dy/dx expression (ft)	**M1**
(b) dy/dx = -9/4 oe cao (accept -2.25)	**A1**
(b) Answer: dy/dx = -9/4	

Question 2

differentiates implicitly: $2x + 2y(dy/dx) + 6 - 4(dy/dx) = 0$	**M1**
rearranges to $dy/dx(2y - 4) = -(2x + 6)$	**A1**
cso: $dy/dx = -(x+3)/(y-2)$	**A1**
Answer: $dy/dx = -(x+3)/(y-2)$	

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