

Boost your performance and confidence with these topic-based exam questions

Practice questions created by actual examiners and assessment experts

Detailed mark scheme

Suitable for all boards

Designed to test your ability and thoroughly prepare you



**Maths** 

Mark Scheme

AQA AS & A LEVEL

%

3.8 G: Differentiation

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(b) 
$$\frac{dy}{dx} = \frac{(2x+1)3 - 2(3x+1)}{(2x+1)^2} = \frac{6x+3-6x-2}{(2x+1)^2} \qquad M1$$

use of quotient rule

$$=\frac{1}{\left(2x+1\right)^2}$$

A1 3 AG (no errors)

Alternative
$$-2(3x+1)(2x+1)^{-2} + 3(2x+1)^{-1}$$

$$= \frac{1}{(2x+1)^{2}}$$
(A1)

Alternative:

$$y = \frac{3}{2} - \frac{1}{2} (2x+1)^{-1}$$
 M1A1  

$$\frac{dy}{dx} = (2x+1)^{-2}$$
 A1  

$$= \frac{1}{(2x+1)^2}$$
 AG

2(a) 
$$y = (3x-1)^{10}$$
  
 $\frac{dy}{dx} = 10 (3x-1)^9 \times 3$   
 $= 30 (3x-1)^9$ 

M1 A1 2 M1 for  $a(3x-1)^9$  where a = constant

6(a)(i) 
$$y = (4x^2 + 3x + 2)^{10}$$
$$\frac{dy}{dx} = 10(4x^2 + 3x + 2)^9(8x + 3)$$

2(a) 
$$4(x-1)^3$$
 or in expanded form

1 allow 
$$-4(1-x)^3$$

Why so short?

Because the techniques learnt are embedded and checked in questions on other topics.