QUESTION NUMBER

2.

$y = 2x^5 - 3x$

$\frac{dy}{dx} = 10x^4 - 3$

$m = 10(1)^4 - 3$

$m = 7$

$x = 1$

$y = 2(1)^5 - 3(1)$

$y = -1$

$(1, -1)$

$y + 1 = 7(x - 1)$

$y + 1 = 7x - 7$

$y = 7x - 8$

DO NOT WRITE IN THIS MARGIN

Question	Generic scheme	Illustrative scheme	Max mark
2.	$\bullet^1$ calculate y-coordinate $\bullet^2$ differentiate $\bullet^3$ calculate the gradient $\bullet^4$ find equation of line	$\bullet^1$ -1 $\bullet^2$ $10x^4-3$ $\bullet^3$ 7 $\bullet^4$ $y=7x-8$	**4**

Notes:

1. Only $\bullet^1$ is available to candidates who integrate.
2. $\bullet^4$ is only available where candidates attempt to find the gradient by substituting into their derivative.
3. The appearance of $10x^4-3$ gains $\bullet^2$.
4. $\bullet^3$ is not available for $y=7$. However, where 7 is then used as the gradient of the straight line, $\bullet^3$ may be awarded - see Candidates B, C & D.
5. $\bullet^4$ is not available as a consequence of using a perpendicular gradient.

Commonly Observed Responses:

Candidate A

$\frac{dy}{dx}=10x^4-3$ $\bullet^2$ ✓
$y=7$ $\bullet^1$ ✗
$m=-3$ $\bullet^3$ ✗
$y=-3x+10$ $\bullet^4$ ✓$_2$

Candidate B - incorrect notation

$y=-1$ $\bullet^1$ ✓ - BoD
$y=10x^4-3$ $\bullet^2$ ✓
$y=7$ $\bullet^3$ ✓ - BoD
$y+1=7(x-1)$
$y=7x-8$ $\bullet^4$ ✓

Candidate C - use of values in equation

$y=-1$ $\bullet^1$ ✓ - BoD
$\frac{dy}{dx}=10x^4-3$ $\bullet^2$ ✓
$\frac{dy}{dx}=7$ $\bullet^3$ ✓
$y=7$
$y+1=7(x-1)$
$y=7x-8$ $\bullet^4$ ✓

Candidate D - incorrect notation

$y=-1$ $\bullet^1$ ✓ - BoD
$\frac{dy}{dx}=10x^4-3$ $\bullet^2$ ✓
$y=7$ $\bullet^3$ ✗

Evidence for $\bullet^3$ would need to appear in the equation of the line

Candidate E

$y=-1$ $\bullet^1$ ✓
$\frac{dy}{dx}=10x^4-3=0$ $\bullet^2$ ✓
$10(1)^4-3=0$ $\bullet^3$ ✗
$m=7$
$y=7x-8$ $\bullet^4$ ✓$_1$