| Question Number | Scheme | Marks |
|---|---|---|
| **1 (a)** | $y = 2x^2(x-5) = 2x^3 - 10x^2$ | B1 |
| | $\frac{dy}{dx} = 6x^2 - 20x$ | M1 |
| | Sets $\frac{dy}{dx} = 0 \Rightarrow 6x^2 - 20x = 0 \Rightarrow x = 0, \frac{10}{3}$ oe | dM1 A1 **(4)** |
| **(b)** | $x \leqslant 0, \quad x \geqslant \frac{10}{3}$ | M1 A1 **(2)** **(6 marks)** |
| **Alt (a)** | $\left(\frac{d(uv)}{dx} = uv' + vu'\right) \qquad u = 2x^2, u' = 4x, v = x-5, v' = 1$ | B1 |
| | $\left(\frac{dy}{dx} =\right) Ax(x-5) + Bx^2$ | M1 |
| | Sets $\frac{dy}{dx} = 0 \Rightarrow 4x(x-5) + 2x^2 = 0 \Rightarrow x = 0, \frac{10}{3}$ | dM1 A1 |

(a)

B1 Expands to a correct form $\left(y =\right)\ 2x^2(x-5) = 2x^3 - 10x^2$

(may be implied by sight of $\frac{dy}{dx} = 6x^2 - 20x$)

If a candidate uses the product rule then award this mark for correct terms for *u*, *u'*, *v* and *v*' stated or implied.

M1 Differentiated reducing a power by one on one of their terms.

If a candidate uses the product rule then look for $\left(\frac{dy}{dx} =\right) Ax(x-5) + Bx^2$. (Do not award for just differentiating the factor in front of the bracket and the $x-5$)

dM1 $\frac{dy}{dx} = 0$ and solves a quadratic equation to find at least one solution. (Usual rules for solving a quadratic). Values such as 0 and 3.33 to imply this mark.

It is dependent on the previous method mark. Dividing by $x$ to find one of the solutions is also acceptable for this mark.

Allow answers to be just written down but you may need to check these on your calculator.