NEXUS SPM ADDITIONAL MATHEMATICS FORM 4 & 5

Page 43 (Step-by-step Workings)







CHAPTER 3: QUADRATIC FUNCTIONS



Paper 1

Solution to Question 5

Solve the following equations simultaneously.

$$y = mx - 7$$
 (1)
 $y = 2x^2 - 3x - 5$ (2)

Substitute (1) into (2).

$$mx - 7 = 2x^{2} - 3x - 5$$
$$2x^{2} - (m+3)x + 2 = 0$$

If y = mx - 7 is a tangent to the graph $y = 2x^2 - 3x - 5$, then it touches the graph at only one point and $b^2 - 4ac = 0$.

$$[-(m+3)]^{2} - 4(2)(2) = 0$$

$$m^{2} + 6m + 9 - 16 = 0$$

$$m^{2} + 6m - 7 = 0$$

$$(m+7)(m-1) = 0$$

$$m = -7 \text{ or } m = 1$$

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