



## CHAPTER 3: QUADRATIC FUNCTIONS



### Paper 1

#### Solution to Question 5

Solve the following equations simultaneously.

$$y = mx - 7 \quad \dots\dots (1)$$

$$y = 2x^2 - 3x - 5 \quad \dots\dots (2)$$

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  $b^2 - 4ac = 0$ .

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

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

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

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

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