

Completing the Square - Harder

For Pearson Edexcel GCSE Mathematics (1MA1) • Higher tier

Name _____

Total marks: **23**

Answer **all** questions in the spaces provided. Show your working: marks are given for correct method.

1 Write $2x^2 + 8x + 1$ in the form $2(x + p)^2 + q$

.....
(2)

(Total for Question 1 is 2 marks)

2 Write $4x^2 + 24x + 11$ in the form $a(x + b)^2 + c$ where a , b and c are integers.

.....
(3)

(Total for Question 2 is 3 marks)

3 Write $3x^2 - 12x + 7$ in the form $a(x - b)^2 - c$

.....
(3)

(Total for Question 3 is 3 marks)

- 4 Write $7 - 6x - x^2$ in the form $a - (x + b)^2$

.....
(2)

(Total for Question 4 is 2 marks)

- 5 $2x^2 + px + q \equiv 2(x - 3)^2 + 1$
Find the values of p and q .

$p = \dots\dots\dots q = \dots\dots\dots$
(2)

(Total for Question 5 is 2 marks)

- 6 Solve $3x^2 + 6x - 2 = 0$ by completing the square.
Give your answers in the form $a \pm \sqrt{b}$

.....
(4)

(Total for Question 6 is 4 marks)

- 7 (a) Write $5x^2 + 20x + 26$ in the form $a(x + b)^2 + c$ where a , b and c are integers.

.....
(3)

- (b) Hence, explain why the graph of $y = 5x^2 + 20x + 26$ does not cross the x -axis.

.....
.....
(1)

(Total for Question 7 is 4 marks)

- 8 A curve has equation $y = 5 + 12x - 3x^2$
Use completing the square to show that the highest point on the curve is (2,17)
You must show your working.

(3)

(Total for Question 8 is 3 marks)