Completing the Square

SCAN ME

REVISE THIS TOPIC

1 Write $x^2 + 6x + 11$ in the form $(x + a)^2 + b$

$(x+3)^2 - 9 + 11$

$(x+3)^2 + 2$

(Total for Question 1 is 2 marks)

2 Write $x^2 + 8x + 30$ in the form $(x + a)^2 + b$

$(x+4)^2 - 16 + 30$

$(x+4)^2 + 14$

(Total for Question 2 is 2 marks)

3 Write $x^2 + 4x + 1$ in the form $(x + a)^2 - b$

$(x+2)^2 - 4 + 1$

$(x+2)^2 - 3$

(Total for Question 3 is 2 marks)

4 Write $x^2 - 10x + 12$ in the form $(x - a)^2 - b$

$(x-5)^2 - 25 + 12$

$(x-5)^2 - 13$

(Total for Question 4 is 2 marks)

5 Write $x^2 - 2x + 13$ in the form $(x - a)^2 + b$

$(x-1)^2 - 1 + 13$

$(x-1)^2 + 12$

(Total for Question 5 is 2 marks)

6 Write $x^2 - 12x - 16$ in the form $(x - a)^2 + b$

$(x-6)^2 - 36 - 16$

$(x-6)^2 - 52$

(Total for Question 6 is 2 marks)

7 Write $x^2 - 20x$ in the form $(x - a)^2 - b$

$(x-10)^2 - 100$

$(x-10)^2 - 100$

(Total for Question 7 is 2 marks)

8 Write $x^2 + 3x + 5$ in the form $(x + a)^2 + b$

$(x+\frac{3}{2})^2 - \frac{9}{4} + 5$

$(x+\frac{3}{2})^2 - \frac{9}{4} + \frac{20}{4}$

$(x+\frac{3}{2})^2 + \frac{11}{4}$

(Total for Question 8 is 3 marks)

9 Write $x^2 - 5x + 7$ in the form $(x - a)^2 + b$

$(x-\frac{5}{2})^2 - \frac{25}{4} + 7$

$(x-\frac{5}{2})^2 - \frac{25}{4} + \frac{28}{4}$

$(x-\frac{5}{2})^2 + \frac{3}{4}$

(Total for Question 9 is 3 marks)

10 Write $x^2 + 9x + 3$ in the form $(x + a)^2 - b$

$(x+\frac{9}{2})^2 - \frac{81}{4} + 3$

$(x+\frac{9}{2})^2 - \frac{81}{4} + \frac{12}{4}$

$(x+\frac{9}{2})^2 - \frac{69}{4}$

(Total for Question 10 is 3 marks)

11 Write $x^2 - x - 2.75$ in the form $(x - a)^2 - b$

$(x-\frac{1}{2})^2 - \frac{1}{4} - 2\frac{3}{4}$

$(x-\frac{1}{2})^2 - 3$

(Total for Question 11 is 3 marks)

12 Here is an identity

$x^2 + px + 32 \equiv (x + 5)^2 - q$

Work out the values of p and q.

$x^2 + px + 32 \equiv x^2 + 10x + 25 - q$

$px = 10x$

$p = 10$

$32 = 25 - q$

$q = 25 - 32$

$q = -7$

$p =$ 10

$q =$ −7

(Total for Question 12 is 3 marks)

13 Here is an identity

$x^2 - 8x + p \equiv (x + q)^2 - 4$

Work out the values of p and q.

$x^2 - 8x + p \equiv x^2 + 2qx + q^2 - 4$

$-8x = 2qx$

$-8 = 2q$

$q = -4$

$p = q^2 - 4$

$p = (-4)^2 - 4$

$p = 16 - 4$

$p =$ 12

$q =$ −4

(Total for Question 12 is 3 marks)