Name:

Level 2 Further Maths

Completing the Square

Corbettmaths

Ensure you have: Pencil or pen

Guidance

1. Read each question carefully before you begin answering it.
2. Check your answers seem right.
3. Always show your workings

Revision for this topic

www.corbettmaths.com/more/further-maths/

1. Work out the values of *a* and *b* such that

$$x^2 + 8x + 3 \equiv (x + a)^2 + b$$

$a =$ ..... $b =$ .....

(2)

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2. Write $x^2 + 4x + 20$ in the form $(x + a)^2 + b$, where a and b are constants

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(2)

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3. Write $x^2 - 6x - 10$ in the form $(x + a)^2 + b$, where a and b are constants

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(2)

4. Write $x^2 + x - 8$ in the form $(x + a)^2 + b$, where a and b are constants

……..

(2)

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5. Write $x^2 - 9x - 1$ in the form $(x + a)^2 + b$, where a and b are constants

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(2)

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6. Work out the values of *a* and *b* such that

$$x^2 + 11x + 3 \equiv (x + a)^2 + b$$

$a =$ …….. $b =$ ……..

(2)

7. $(x + a)^2 + 11 \equiv x^2 - 10x + b$

Work out the values of a and b

$a =$ ..... $b =$ .....

(3)

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8. $x^2 + 4ax + b \equiv (x + 8)^2 - 3a$

Work out the values of a and b

$a =$ ..... $b =$ .....

(3)

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9. Write $2x^2 + 8x + 2$ in the form $a(x + b)^2 + c$, where a, b and c are constants

.....

(4)

10. Write $2x^2 + 12x - 3$ in the form $a(x + b)^2 + c$, where a, b and c are constants

……..

(4)

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11. Write $3x^2 - 12x + 2$ in the form $a(x + b)^2 + c$, where a, b and c are constants

……..

(4)

12. Write $4x^2 + 12x - 5$ in the form $a(x + b)^2 + c$, where a, b and c are constants

……..

(4)

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13. Write $2x^2 - 17x + 1$ in the form $a(x + b)^2 + c$, where a, b and c are constants

……..

(4)

14. Write $8x^2 - 56x + 5$ in the form $a(bx + c)^2 + d$ where a, b, c and d are integers.

……..

(5)

15. (a) Work out the values of *a* and *b* such that

$$x^2 + 10x + 7 \equiv (x + a)^2 + b$$

$a =$ ..... $b =$ .....

(2)

(b) Write down the coordinates of the minimum point on the curve
$y = x^2 + 10x + 7$

.....

(1)

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16. (a) Work out the values of *a* and *b* such that

$$x^2 - 6x - 20 \equiv (x + a)^2 + b$$

$a =$ ..... $b =$ .....

(2)

(b) Write down the coordinates of the minimum point on the curve
$y = x^2 - 6x - 20$

.....

(1)

17. By using completing the square, find the coordinates of the minimum point on the curve $y = x^2 + 3x - 5$

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(4)

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18. The nth term of a sequence is $n^2 - 4n + 5$

By using completing the square, show that every term is positive.

(3)

19. The nth term of a sequence is $n^2 - 10n + 30$

By using completing the square, show that every term is positive.

(3)