Name:

Level 2 Further Maths

Differentiation

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. $y = 7x^2$

Work out $\frac{dy}{dx}$

$\frac{dy}{dx} =$ .....

(2)

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2. $y = 3x^3 - 8x$

Work out $\frac{dy}{dx}$

$\frac{dy}{dx} =$ .....

(2)

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3. $y = 8x^3 + x - 4$

Work out $\frac{dy}{dx}$

$\frac{dy}{dx} =$ .....

(3)

4. $y = x^7 - 3x^6$

Work out $\frac{dy}{dx}$

$\frac{dy}{dx} =$ .....

(3)

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5. $y = (x + 4)(x + 2)$

Work out $\frac{dy}{dx}$

$\frac{dy}{dx} =$ .....

(3)

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6. $y = 5x^2 - 3x + 7$

Find the value of $\frac{dy}{dx}$ when $x = 1$

$\frac{dy}{dx} =$ .....

(3)

7. $y = x^3(x - 4)$

Work out $\frac{dy}{dx}$

$\frac{dy}{dx} =$ .....

(3)

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8. $y = (3x - 2)^2$

Work out $\frac{dy}{dx}$

$\frac{dy}{dx} =$ .....

(3)

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9. $y = \frac{x^9}{3} + \frac{x^4}{4}$

Work out $\frac{dy}{dx}$

$\frac{dy}{dx} =$ .....

(3)

10. $y = x^3 + 4x^2 + 2$

When $x = -2$, show that the value of $\frac{dy}{dx}$ is -4

(3)

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11. $y = (1 - 2x)(3 - x)$

Work out $\frac{dy}{dx}$

$\frac{dy}{dx} =$ .....

(3)

12. $y = (x^4 - 3)^2$

Work out $\frac{dy}{dx}$

$\frac{dy}{dx} =$ .....

(4)

13.. $y = \frac{3}{x^2}$

$\frac{dy}{dx} =$ .....

(2)

14. $y = \dfrac{3x^3(x^2 - 4x)}{x}$

Work out $\dfrac{dy}{dx}$

$\dfrac{dy}{dx} =$ .....

(4)

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15. $y = \dfrac{4x(x^3 - 2x)}{x^2}$

Work out $\dfrac{dy}{dx}$

$\dfrac{dy}{dx} =$ .....

(3)

16. $y = 9x^4 - \frac{4}{x^3}$

Work out $\frac{dy}{dx}$

$\frac{dy}{dx} =$ .....

(3)

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17. $y = \frac{3}{5}x^{10} + 3x^6$

Work out $\frac{dy}{dx}$

$\frac{dy}{dx} =$ .....

(3)

18. $y = (\sqrt{x})^{10}$

Work out $\frac{dy}{dx}$

$\frac{dy}{dx} =$ .....

(3)

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19. $y = 2x^{\frac{3}{2}}(x^{\frac{1}{2}} + x^{\frac{9}{2}})$

Work out $\frac{dy}{dx}$

$\frac{dy}{dx} =$ .....

(4)

20. $y = 4x^2 + px$ where p is a constant

The value of $\frac{dy}{dx}$ when $x = 3$ is five times the value of $\frac{dy}{dx}$ when $x = -1$

Work out the value of *p*

$p =$ .....

(5)

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21. $y = \frac{3x^4 + 8x}{2x}$

Work out the possible values of *x* when $\frac{dy}{dx} = 882$

$x =$ .....

(5)