

1.5 Answers

GCSE Mathematics Differentiation I

1.5.1 Solutions (1.1 Teaching Video)

- | | | |
|---------------------|--------------------|--|
| (i) $\frac{9}{49}$ | (ii) $\frac{1}{9}$ | (iii) 1 |
| (iv) $\frac{8}{27}$ | (v) $\frac{4}{3}$ | (vi) $0.125 = \left(\frac{1}{8}\right)^2 = \frac{1}{64}$ |
| (vii) 32 | (viii) 4 | (ix) 4 |

[9 marks]

1.5.2 Solutions (1.3 Exercise)

Answer 1

- | | | |
|-------------------------|-------------------------|---------------------|
| (i) 16 | (ii) 256 | (iii) 7 |
| (iv) $\frac{1}{32}$ | (v) $\frac{8}{125}$ | (vi) $\frac{1}{16}$ |
| (vii) 6 | (viii) 1 | (ix) 9 |
| (x) 5 | (xi) 5 | (xii) $\frac{3}{2}$ |
| (xiii) 100 | (xiv) 169 000 | (xv) $\frac{1}{49}$ |
| (xvi) $\frac{1}{5}$ | (xvii) 1 | (xviii) 8 |
| (xix) 4 | (xx) $\frac{1}{8}$ | (xxi) $\frac{1}{9}$ |
| (xxii) $\frac{7}{3}$ | (xxiii) $\frac{1}{100}$ | (xxiv) 4 |
| (xxv) $\frac{27}{1000}$ | (xxvi) 9 | |

[26 marks]

Answer 2

- | | | |
|---------------------|----------------------|------------------------|
| (i) 9 | (ii) 128 | (iii) $\frac{1}{8000}$ |
| (iv) $\frac{1}{16}$ | (v) $\frac{125}{27}$ | (vi) 20 |
| (vii) 1 | (viii) - 8 | (ix) 13 |
| (x) 9 | (xi) 4 | (xii) $\frac{1}{5}$ |
| (xiii) 225 | (xiv) 1 960 000 | (xv) $\frac{1}{13}$ |
| (xvi) 1 | (xvii) 1 | |

(xviii)	27	(xix)	4	(xx)	$\frac{1}{32}$
(xxi)	$\frac{36}{25}$	(xxii)	$\frac{2}{3}$	(xxiii)	$\frac{1}{1000\ 000}$
(xxiv)	3	(xxv)	$\frac{100}{9}$	(xxvi)	25

[26 marks]

Answer 3

$$y = x^2 + x$$

(1, 2)	(4, 20)	(100, 10100)	(- 1, 0)
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[4 marks]

Answer 4

$$y = x^3 - 5$$

(0, - 5)	(1, - 4)	(- 1, - 6)	(5, 120)
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[4 marks]

Answer 5

$$y = x^{\frac{3}{2}} + 3$$

(0, 3)	(1, 4)	(4, 11)	(9, 30)
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[4 marks]

Answer 6

$$y = 2 + x^{-1}$$

(1, 3)	(- 1, 1)	(2, 2.5)	(10, 2.1)
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[4 marks]

Answer 7

$$y = x^2 + x^{\frac{1}{2}}$$

(1, 2)	(4, 18)	(100, 10010)	$\left(\frac{1}{4}, \frac{9}{16} \right)$
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[4 marks]

Answer 8

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

(1, 5)	(3, 63)	(0, 0)	(- 1, 3)
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[4 marks]