



Name _____ Class _____ Date _____

AFTER THIS WORKSHEET YOU CAN

- ✓ Recognise composite functions. ✓ Apply the chain rule $d/dx f(g(x)) = f'(g(x)) \cdot g'(x)$.
- ✓ Differentiate powers, exponentials, logs and trig of an inner function.
- ✓ Combine the chain rule with other differentiation rules.



Section A · Concept Check

• BEGINNER

$4 \times 1 = 4$

1 $d/dx[(4x - 3)^6] = ?$

- ☐ A. $6(4x - 3)^5$ ☐ B. $24(4x - 3)^5$
- ☐ C. $24(4x - 3)^6$ ☐ D. $6(4x - 3)^5 \cdot 4x$

3 $d/dx[\sin(5x)] = ?$

- ☐ A. $\cos(5x)$ ☐ B. $5\cos(5x)$ ☐ C. $5\sin(5x)$
- ☐ D. $\cos 5$

2 The chain rule $d/dx[f(g(x))]$ equals:

- ☐ A. $f'(g(x))$ ☐ B. $f'(x)g'(x)$ ☐ C. $f'(g(x)) \cdot g'(x)$
- ☐ D. $f(g'(x))$

4 $d/dx[e^{(-2x)}] = ?$

- ☐ A. $e^{(-2x)}$ ☐ B. $-2e^{(-2x)}$ ☐ C. $-2x \cdot e^{(-2x)}$
- ☐ D. $2e^{(-2x)}$



Section B · Problem Solving

• INTERMEDIATE

$2 + 3 \times 3 = 11$

5 Chain rule: $d/dx[f(g(x))] = f'(g(x)) \cdot$ _____

6 $d/dx[\sin(5x)] =$ _____

7 Differentiate $y = (4x - 3)^6$.

8 Differentiate $y = \sin(5x)$.

9 Differentiate $y = (x^3 + 2)^2$.



Section C · Challenge

• CHALLENGE

5

10 Differentiate $y = e^{(-2x)}$.



Reflection — the most useful thing I learned: _____

A ___/4

B ___/11

C ___/5

Total ___/20

Teacher's Signature

Parent's Signature

ANSWER KEY — FOLD OR CUT BEFORE HANDING OUT

1-B 2-C 3-B 4-B | 5 $g'(x)$ 6 $5 \cos(5x)$ 7 $= 24(4x - 3)^5$ 8 $= 5\cos(5x)$ 9 $= 6x^2(x^3 + 2)$ |

10 $= -2e^{(-2x)}$

