

The Product Rule

differentiate with respect to x , expressing each answer in its factorised form:

1. $y = x \cos(x)$
2. $y = 2x \sin(x)$
3. $y = 3x \sin(2x)$
4. $y = 4x \cos(3x)$
5. $y = x^2 \cos(x)$
6. $y = x \cos(x^2)$
7. $y = 4x \cos(x^3)$
8. $y = 2x \cos^2(x)$
9. $y = 3x^2 \sin(2x)$
10. $y = \sin(3x) \cos(2x)$

The Product Rule

answers:

1.

$$\cos(x) - x \sin(x)$$

2.

$$2x \cos(x) + 2 \sin(x)$$

3.

$$6x \cos(2x) + 3x \sin(2x)$$

4.

$$\cos(3x) - 12x \sin(3x)$$

5.

$$2x \cos(x) - x^2 \sin(x)$$

6.

$$\cos(x^2) - 2x^2 \sin(x^2)$$

7.

$$4 \cos(x^3) - 12x^3 \sin(x^3)$$

8.

$$2 \cos^2(x) - 4x \sin(x) \cos(x)$$

9.

$$6x^2 \cos(2x) + 6x \sin(2x)$$

10.

$$3 \cos(2x) \cos(3x) - 2 \sin(2x) \sin(3x)$$