

H.W

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# CHAPTER-12

## IDENTITIES

### Exercise-12(A)

classmate

Date

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1. Use direct method to evaluate the following products :

$$(i) (x+8)(x+3)$$

$$\begin{aligned} &= x(x+3) + 8(x+3) \\ &= x^2 + 3x + 8x + 24 \\ &= x^2 + 11x + 24 \end{aligned}$$

$$(ii) (y+5)(y-3)$$

$$\begin{aligned} &= y(y-3) + 5(y-3) \\ &= y^2 - 3y + 5y - 15 \\ &= y^2 + 2y - 15 \end{aligned}$$

$$(iii) (a-8)(a+2)$$

$$\begin{aligned} &= a(a+2) - 8(a+2) \\ &= a^2 + 2a - 8a - 16 \\ &= a^2 - 6a - 16 \end{aligned}$$

$$(iv) (b-3)(b-5)$$

$$\begin{aligned} &= b(b-5) - 3(b-5) \\ &= b^2 - 5b - 3b + 15 \\ &= b^2 - 8b + 15 \end{aligned}$$

$$(v) (3x-2y)(2x+y)$$

$$\begin{aligned} &= 3x(2x+y) - 2y(2x+y) \\ &= 6x^2 + 3xy - 4xy - 2y^2 \\ &= 6x^2 + xy - 2y^2 \end{aligned}$$

$$(vi) (5a+16)(3a-7)$$

$$\begin{aligned} &= 5a(3a-7) + 16(3a-7) \\ &= 15a^2 - 35a + 48a - 112 \\ &= 15a^2 + 13a - 112 \end{aligned}$$

$$(vii) (8-b)(3+b)$$

$$\begin{aligned} &= 8(3+b) - b(3+b) \\ &= 24 + 8b - 3b - b^2 \\ &= 24 + 5b - b^2 \end{aligned}$$

2. Use direct method to evaluate:

$$(i) (x+1)(x-1)$$

$$\begin{aligned} &= x(x-1) + 1(x-1) \\ &= x^2 - x + x - 1 \\ &= x^2 - 1 \end{aligned}$$

$$(ii) (2+a)(2-a)$$

$$\begin{aligned} &= 2(2-a) + a(2-a) \\ &= 4 - 2a + 2a - a^2 \\ &= 4 - a^2 \end{aligned}$$

$$(iii) (3b-1)(3b+1)$$

$$\begin{aligned} &= 3b(3b+1) - 1(3b+1) \\ &= 9b^2 + 3b - 3b - 1 \\ &= 9b^2 - 1 \end{aligned}$$

$$(iv) (4+5x)(4-5x)$$

$$\begin{aligned} &= 4(4-5x) + 5x(4-5x) \\ &= 16 - 20x + 20x - 25x^2 \\ &= 16 - 25x^2 \end{aligned}$$

$$(v) (2a+3)(2a-3)$$

$$\begin{aligned} &= 2a(2a-3) + 3(2a-3) \\ &= 4a^2 - 6a + 6a - 9 \\ &= 4a^2 - 9 \end{aligned}$$

$$(vi) (xy+4)(xy-4)$$

$$\begin{aligned} &= xy(xy-4) + 4(xy-4) \\ &= x^2y^2 - 4xy + 4xy - 16 \\ &= x^2y^2 - 16 \end{aligned}$$

$$(vii) (ab+x^2)(ab-x^2)$$

$$\begin{aligned} &= (ab)^2 - (x^2)^2 \\ &= a^2b^2 - x^4 \end{aligned}$$

$$(viii) (3x^2+5y^2)(3x^2-5y^2)$$

$$\begin{aligned} &= (3x^2)^2 - (5y^2)^2 \\ &= 9x^4 - 25y^4 \end{aligned}$$

$$(ix) \left(2 - \frac{2}{3}\right) \left(2 + \frac{2}{3}\right)$$

$$= \left(2\right)^2 - \left(\frac{2}{3}\right)^2$$

$$= 2^2 - \frac{4}{9}$$

$$(x) \left(\frac{3}{5}a + \frac{1}{2}\right) \left(\frac{3}{5}a - \frac{1}{2}\right)$$

$$= \left(\frac{3}{5}a\right)^2 - \left(\frac{1}{2}\right)^2$$

$$= \frac{9}{25}a^2 - \frac{1}{4}$$

$$(xi) (0.5 - 2a)(0.5 + 2a) \quad (xii) \left(\frac{a}{2} - \frac{b}{3}\right)\left(\frac{a}{2} + \frac{b}{3}\right)$$

$$= (0.5)^2 - (2a)^2$$

$$= 0.25 - 4a^2$$

$$= \left(\frac{a}{2}\right)^2 - \left(\frac{b}{3}\right)^2$$

$$= \frac{a^2}{4} - \frac{b^2}{9}$$