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Ex 19. a

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2) i) $48x^2$

ii) $18a^2bx$

iii) $6c^6$

iv) $25a^3$

v) $216x^4y^3$

vi) $24x^2$

vii) $75x^3$

viii) $-96x^4y^4$

ix) $-60x^2y^2$

x) $-140x^2y^6$

3) i) $3x^3 \times 5x^4$

$= 15x^{3+4}$

$= 15x^7$

ii) $5a^2 \times 7a^4$

$= 35a^{2+4}$

$= 35a^6$

iii) $3abc \times 6ac^3$

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$$= 18a^{1+1} b^{2+3}$$

$$= 18a^2 b^5$$

ii) $a^2 b^2 \times 5a^3 b^4$

$$= 5a^{2+3} b^{2+4}$$

$$= 5a^5 b^6$$

iii) $2x^2 y^3 \times 5x^3 y^4$

$$= 10x^{2+3} y^{3+4}$$

$$= 10x^5 y^7$$

iv) $abc \times bcd$

$$= a^{1+1} b^{1+1} c^1 d$$

$$= a^2 b^2 cd$$

3) i) $x+2 \times (x+10)$

$$= x(x+10) + 2(x+10)$$

$$= x^2 + 10x + 2x + 20$$

$$= x^2 + (10x + 2x) + 20$$

$$= x^2 + 12x + 20$$

ii) $x+5 \times (x-3)$

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$$x(x-3) + 5(x-3)$$

$$= x^2 - 3x + 5x - 15$$

$$= (-3x + 5x) + x^2 - 15$$

$$= 2x + x^2 - 15$$

$$\text{iii) } x-5 \times (x+3)$$

$$= x(x+3) - 5(x+3)$$

$$= x^2 + 3x - 5x - 15$$

$$= x^2 + (3x - 5x) - 15$$

$$= x^2 - 2x - 15$$

$$\text{iv) } x-5 \text{ and } x-3$$

$$= x(x-3) - 5(x-3)$$

$$= x^2 - 3x - 5x + 15$$

$$= (-3x - 5x) + x^2 + 15$$

$$= -8x + x^2 + 15$$

$$\text{v) } 2x + y \times (x + 3y)$$

$$= 2x(x + 3y) + y(x + 3y)$$

$$= 2x^2 + 6xy + yx + 3y^2$$

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$$= (6xy + yx) + 2x^2 + 3y^2$$

$$= 7xy + 2x^2 + 3y^2$$

ii) $3x - 5y \times (x + 6y)$

$$= 3x(x + 6y) - 5y(x + 6y)$$

$$= 3x^2 + 18xy - 5yx - 30y^2$$

$$= 3x^2 + (18xy - 5yx) - 30y^2$$

$$= 3x^2 + 13xy - 30y^2$$

iii) $x + 9y \times (x - 5y)$

$$= x(x - 5y) + 9y(x - 5y)$$

$$= x^2 - 5yx + 9yx - 45y^2$$

$$= (-5yx + 9yx) + x^2 - 45y^2$$

$$= 4yx + x^2 - 45y^2$$

iii) $2x + 5y \times (2x + 5y)$

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

$$= 4x^2 + 10xy + 10yx + 25y^2$$

$$= 4x^2 + (10xy + 10yx) + 25y^2$$

$$= 4x^2 + 20xy + 25y^2$$

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Ex 19 D

$$2) i) \frac{2x^5}{x^2} = 2x^3$$

$$ii) \frac{6a^8}{3a^3} = 2a^5$$

$$iii) \frac{20xy}{-5xy} = -4$$

$$iv) \frac{-24abc^2}{6ab} = -4abc^2$$

$$v) \frac{-5x^2y}{xy^2} = -5xy^{-1}$$

$$vi) \frac{40p^3q^4r^5}{20p^3q} = 4q^3r^5$$

$$vii) \frac{-64xy^3z}{4xy^3z} = -16xy$$

$$viii) \frac{35xy^5}{7xy^3} = 5x^{-1}y^2$$

$$3) i) \frac{-3m}{4} \div \frac{2m}{1}$$
$$= \frac{-3m}{4} \times \frac{1}{2m}$$
$$= \frac{-3}{8}$$

$$ii) \frac{-15p^8}{-5p^5} = 3p^3$$

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iii) $\frac{-21m^5n^4}{14m^2n^2} = \frac{-3}{2} m^3n^2$

iv) $\frac{3x^4y^5}{4x^2y^3} = \frac{3}{4} x^2y^2$

i) $\frac{20x^3y}{5xy} = \frac{4x^2y}{y}$

ii) $\frac{28a^2b^3}{c^2} \div \frac{4abc}{1}$

$\frac{28a^2b^3}{c^2} \times \frac{1}{4abc}$

$\frac{7ab^2}{c^3}$

iii) $\frac{2a^2}{9b^2} \div \frac{3b}{2a}$

$= \frac{2a^2}{9b^2} \times \frac{2a}{3b}$

$= \frac{4a^3}{27b^3}$

iii) $\frac{-5.5x^2}{xy} \div \frac{11x}{y}$

$\frac{-5.5x^2}{xy} \times \frac{y}{11x} = -0.5$

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$$\text{iv) } \frac{14x^2y^2}{2z} \div \frac{8xy}{z} =$$

$$= \frac{14x^2y^2}{2z} \times \frac{z}{8xy} =$$

$$= \frac{8xy}{z}$$