

6.4.1. ದ್ವಿಪದೋಕ್ತಿಗಳನ್ನು ಗುಣಿಸಿ.

ಗಮನಿಸಿ: ಇಲ್ಲಿನ ಎಲ್ಲಾ ಲೆಕ್ಕಗಳನ್ನು ಬಿಡಿಸಲು ವಿತರಣಾ ನಿಯಮವನ್ನು ಉಪಯೋಗಿಸುತ್ತೇವೆ. ನಂತರ ಸಜಾತೀಯ ಪದಗಳನ್ನು ಒಟ್ಟಿಗೆ ಸೇರಿಸುತ್ತೇವೆ.

(i) $(2x+5) * (4x-3)$	$= 2x(4x-3) + 5(4x-3) = 2x * 4x - 2x * 3 + 5 * 4x - 5 * 3 = 8x^2 - 6x + 20x - 15 = 8x^2 + 14x - 15$
(ii) $(y-8) * (3y-4)$	$= y(3y-4) - 8(3y-4) = y * 3y - y * 4 - 8 * 3y - 8 * -4 = 3y^2 - 4y - 24y + 32 = 3y^2 - 28y + 32$
(iii) $(2.5l-0.5m) * (2.5l+0.5m)$	$= 2.5l(2.5l+0.5m) - 0.5m(2.5l+0.5m)$ $= 2.5l * 2.5l + 2.5l * 0.5m - 0.5m * 2.5l - 0.5m * 0.5m = (2.5l)^2 - (0.5m)^2 = 6.25l^2 - 0.25m^2$
(iv) $(a+3b) * (x+5)$	$= a(x+5) + 3b(x+5) = ax + 5a + 3bx + 15b$
(v) $(2pq+3q^2)(3pq-2q^2)$	$= 2pq(3pq-2q^2) + 3q^2(3pq-2q^2) = 2pq * 3pq - 2pq * 2q^2 + 3q^2 * 3pq - 3q^2 * 2q^2$ $= 6(pq)^2 - 4pq * q^2 + 9q^2 * pq - 6q^4$ $= 6p^2q^2 - 4pq^3 + 9p^3q - 6q^4 = 6p^2q^2 + 5pq^3 - 6q^4$
(vi) $(\frac{3}{4}a^2+3b^2)4(a^2-\frac{2}{3}b^2)$	$= (\frac{3}{4}a^2+3b^2)(4a^2-\frac{8}{3}b^2) = \frac{3}{4}a^2(4a^2-\frac{8}{3}b^2) + 3b^2(4a^2-\frac{8}{3}b^2)$ $= \frac{3}{4}a^2 * 4a^2 - \frac{3}{4}a^2 * \frac{8}{3}b^2 + 3b^2 * 4a^2 - 3b^2 * \frac{8}{3}b^2$ $= 3a^4 - 2a^2b^2 + 12b^2a^2 - 8b^4$

6.4.2. ಗುಣಲಬ್ಧ ಕಂಡುಹಿಡಿಯಿರಿ.

(i) $(5-2x)(3+x)$	$= 5(3+x) - 2x(3+x) = 5 * 3 + 5 * x - 2x * 3 - 2x * x = 15 + 5x - 6x - 2x^2 = 15 - x - 2x^2$
(ii) $(x+7y)(7x-y)$	$= x(7x-y) + 7y(7x-y) = x * 7x - x * y + 7y * 7x - 7y * y = 7x^2 - xy + 49xy - 7y^2 = 7x^2 + 48xy - 7y^2$
(iii) $(a^2+b)(a+b^2)$	$= a^2(a+b^2) + b(a+b^2) = a^2 * a + a^2 * b^2 + b * a + b * b^2 = a^3 + a^2b^2 + ab + b^3$
(iv) $(p^2-q^2)(2p+q)$	$= p^2(2p+q) - q^2(2p+q) = p^2 * 2p + p^2 * q - q^2 * 2p - q^2 * q = 2p^3 + p^2q - 2pq^2 - q^3$

6.4.3. ಸಂಕ್ಷೇಪಿಸಿ.

(i) $(x^2-5)(x+5)+25$	$=x^2(x+5)-5(x+5)+25=x^3+5x^2-5x-25+25=x^3+5x^2-5x$
(ii) $(a^2+5)(b^3+3)+5$	$=a^2(b^3+3)+5(b^3+3)+5=a^2b^3+3a^2+5b^3+15+5=a^2b^3+3a^2+5b^3+20$
(iii) $(t+s^2)(t^2-s)$	$=t(t^2-s)+s^2(t^2-s)=t^3-st+s^2t^2-s^3$
(iv) $(a+b)(c-d)+(a-b)(c+d)+2(ac+bd)$	$=a(c-d)+b(c-d)+a(c+d)-b(c+d)+2(ac+bd)$ $=ac-ad+bc-bd+ac+ad-bc-bd+2ac+2bd$ $=4ac$
(v) $(x+y)(2x+y)+(x+2y)(x-y)$	$=x(2x+y)+y(2x+y)+x(x-y)+2y(x-y)=2x^2+xy+2xy+y^2+x^2-xy+2xy-2y^2$ $=3x^2+4xy-y^2$
(vi) $(x+y)(x^2-xy+y^2)$	$=x(x^2-xy+y^2)+y(x^2-xy+y^2)=x^3-x^2y+xy^2+x^2y-xy^2+y^3$ $=x^3+y^3$
(vii) $(1.5x-4y)(1.5x+4y+3)-4.5x+12y$	$=1.5x(1.5x+4y+3)-4y(1.5x+4y+3)-4.5x+12y$ $= (1.5x)^2+(1.5)*4y+(1.5)*3x-4*(1.5)xy-16y^2-12y-4.5x+12y$ $=2.25x^2+6xy+4.5x-6xy-16y^2-12y-4.5x+12y$ $=2.25x^2-16y^2$
(viii) $(a+b+c)(a+b-c)$	$=a(a+b-c)+b(a+b-c)+c(a+b-c)$ $=a^2+ab-ac+ba+b^2-bc+ac+bc-c^2$ $=a^2+b^2-c^2+2ab$