Date

Exercise : No: 6.5

→ Factorize :

(i) $9 - x^2$

Sol: $9 - x^2$ $\quad \because a^2 - b^2 = (a+b)(a-b)$

$= (3)^2 - (x)^2$

$= (3-x)(3+x)$ Ans:-

(ii) $-6 + 6y^2$

Sol: $-6 + 6y^2$

$= 6y^2 - 6$

$= 6(y^2 - 1)$

$= 6\{(y)^2 - (1)^2\}$

$= 6(y+1)(y-1)$ Ans:

(iii) $11(a+b)^2 - 99c^2$

Sol: $11(a+b)^2 - 99c^2$

$= 11\{(a+b)^2 - 9c^2\} = 11\{(a+b)^2 - (3c)^2\}$

$= 11(a+b+3c)(a+b-3c)$ Ans:-

(iv) $\left(x - \frac{9}{5}\right)^2 - \frac{36}{25}y^2$

Sol: $\left(x - \frac{9}{5}\right)^2 - \frac{36}{25}y^2$

$= \left(x - \frac{9}{5}\right)^2 - \left(\frac{6}{5}y\right)^2$

$= \left\{\left(x - \frac{9}{5}\right) + \frac{6}{5}y\right\}\left\{\left(x - \frac{9}{5} - \frac{6}{5}y\right)\right\}$

$= \left[x - \frac{9}{5} + \frac{6}{5}y\right]\left[x - \frac{9}{5} - \frac{6}{5}y\right]$ Ans:-

Date

(ii) $36\left[x-\frac{1}{4}\right]^2 - 64\left[x-\frac{5}{4}\right]^2$

Sol: $36\left[x-\frac{1}{4}\right]^2 - 64\left[x-\frac{5}{4}\right]^2$

$= \left\{6\left(x-\frac{1}{4}\right)\right\}^2 - \left\{8\left(x-\frac{5}{4}\right)\right\}^2$

$= \left(6x-\frac{6}{4}\right)^2 - \left(8x-\frac{40}{4}\right)^2$

$= \left\{\left(6x-\frac{6}{4}\right)+\left(8x-\frac{40}{4}\right)\right\}\left\{\left(6x-\frac{6}{4}\right)-\left(8x-\frac{40}{4}\right)\right\}$

$= \left(6x-\frac{6}{4}+8x-\frac{40}{4}\right)\left(6x-\frac{6}{4}-8x+\frac{40}{4}\right)$

$= \left(6x+8x-\frac{6}{4}-\frac{40}{4}\right)\left(6x-8x-\frac{6}{4}+\frac{40}{4}\right)$

$= \left(14x-\frac{46}{4}\right)\left(-2x+\frac{34}{4}\right)$

$= \left(14x-\frac{23}{2}\right)\left(-2x+\frac{17}{2}\right)$

$= \left(\frac{28x-23}{2}\right)\left(\frac{-4x+17}{2}\right)$ Ans:

⇒ Evaluate the following:-

(i) $(371)^2-(129)^2$ $\quad \because a^2-b^2=(a+b)(a-b)$

Sol: $=(371+129)(371-129)$

$=(500)(242)$

$=121000$ Ans:-

(ii) $\frac{(0.409)^2 - (0.391)^2}{(0.409) - 0.391)}$

Sol: $\frac{(0.409)^2 - (0.391)^2}{(0.409 - 0.391)}$ $\therefore a^2 - b^2 = (a+b)(a-b)$

$= \frac{(0.409 + 0.391)(0.409 - 0.391)}{(0.409 - 0.391)}$

$= 0.409 + 0.391$

$= 0.800$ Ans:-

Exercise : No : 6.6

→ Factorize :

(i) $a^2 + 2ab + b^2 - c^2$

Sol: $a^2 + 2ab + b^2 - c^2$ $\therefore (a+b)^2 = a^2 + 2ab + b^2$

$= (a^2 + 2ab + b^2) - (c)^2$

$= (a+b)^2 - (c)^2$ $\therefore a^2 - b^2 = (a+b)(a-b)$

$= (a+b+c)(a+b-c)$ Ans:-

(ii) $9a^2 - 6ab + b^2 - 16c^2$

Sol: $(9a^2 - 6ab + b^2) - 16c^2$

$= \{(3a)^2 - 2(3a)(b) + (b)^2\} - (4c)^2$

$= (3a - b)^2 - (4c)^2$

$= (3a - b + 4c)(3a - b - 4c)$ Ans:-

(iii) $a^2 + b^2 + 2ab - 9a^2b^2$

Sol:- $(a^2 + b^2 + 2ab) - (9a^2b^2)$

$= (a+b)^2 - (3ab)^2$

$= (a+b+3ab)(a+b-3ab)$ Ans:-