Two sides of a rhombus are along the lines $x - y + 1 = 0$ and $7x - y - 5 = 0$. If its diagonals intersect at $(-1, -2)$, then which one of the following is a vertex of this rhombus?

A $(-3, -8)$

B $(1/3, -8/3)$

C $(-10/3, -7/3)$

D $(-3, -9)$

Correct option is B)

Point of intersection of the two sides is $(1, 2)$

$\therefore$ Diagonal passing through $(1, 2)$ and $(-1, -2)$ is

$$\frac{y-2}{2-(-2)} = \frac{x-1}{1-(-1)}$$

$$\therefore \frac{y-2}{4} = \frac{x-1}{2}$$

$\therefore y = 2x$ is one diagonal

As diagonals of Rhombus are $\perp$ to each other and also passes through $(-1, -2)$

Its equation is $y = \dfrac{-1}{2}x + c$

Putting $(-1, -2)$ in equation $c = \dfrac{-5}{2}$

$\therefore$ equation of other diagonal is $2y + x + 5 = 0$

Solving this equation with $zx - y - 5 = 0$

we get the vertex point $\left(\dfrac{1}{3}, \dfrac{-8}{3}\right)$.