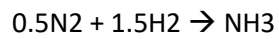
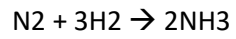


If bond enthalpies of  $\text{N}\equiv\text{N}$ ,  $\text{H}-\text{H}$ ,  $\text{N}-\text{H}$  bonds are  $x_1$ ,  $x_2$  and  $x_3$  respectively, then heat of formation of  $\text{NH}_3$  will be:

- a)  $x_1 + 3x_2 - 6x_3$
- b)  $0.5x_1 + 1.5x_2 - 3x_3$
- c)  $3x_3 - 0.5x_1 - 1.5x_2$
- d)  $6x_3 - x_1 - 3x_2$

Solution: b)

Explanation:



So, for formation of 1 mol  $\text{NH}_3$ , 0.5 mol  $\text{N}_2$  and 1.5 mol  $\text{H}_2$  required.

$$\text{Enthalpy of formation} = 0.5x_1 + 1.5x_2 - 3x_3$$