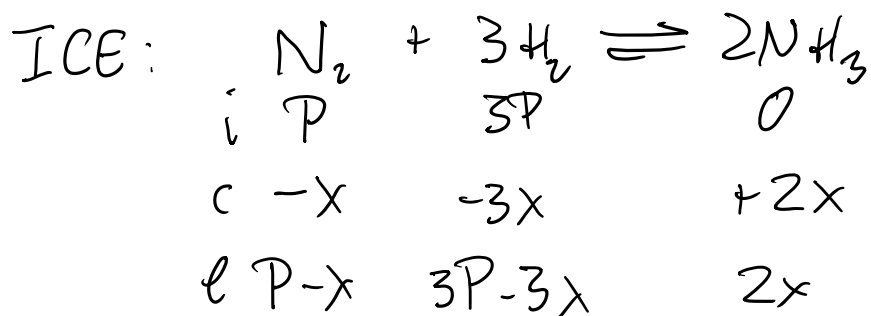


The gases are mixed in stoichiometric proportion, so we'll have "P" bar of N_2 and "3P" bar of H_2 initially



Since 41.49% of the gas is NH_3 at equilibrium, then $P_{NH_3} = (110)(0.4149) = 45.639$ bar

From the "e" line above, the pressure of H_2 will be 3 times the pressure of N_2 . So:

$$z + 3z + 45.639 = 110$$

$$\Rightarrow z = 16.09025 \text{ bar} = P_{N_2, e}$$

$$3z = 48.27075 \text{ bar} = P_{H_2, e}$$

$$K_p = \frac{P_{NH_3, e}^2}{P_{N_2, e} \cdot P_{H_2, e}^3} = \frac{(45.639)^2}{(16.09025)(48.27075)^3} = \boxed{1.15 \times 10^{-3}}$$