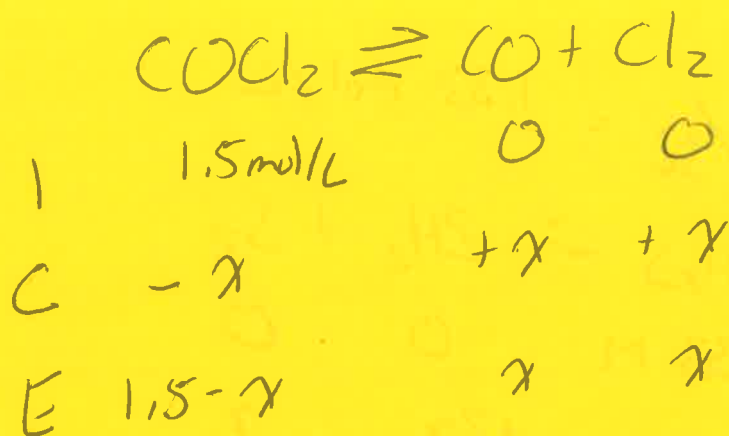


pg 457 # 71, 72

71)



$$K_{eq} = \frac{[\text{CO}][\text{Cl}_2]}{[\text{COCl}_2]}$$

$$K_{eq} = 2.2 \times 10^{-8}$$

$$2.2 \times 10^{-8} = \frac{(x)(x)}{1.5}$$

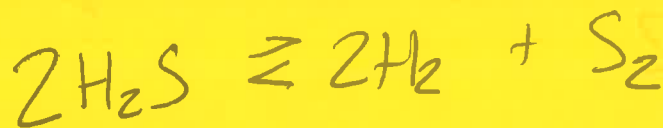
$$(2.2 \times 10^{-8})(1.5) = x^2$$

$$x^2 = 3.3 \times 10^{-8}$$

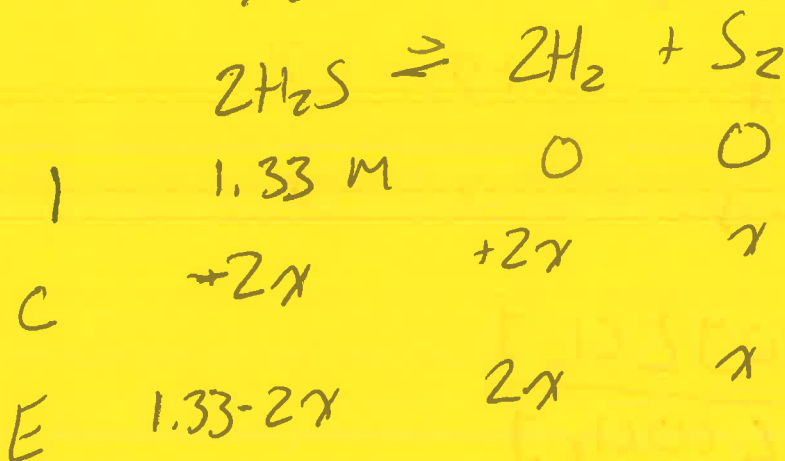
$$x = \sqrt{3.3 \times 10^{-8}}$$

$$x = 1.8 \times 10^{-4}$$

72)



$$[\text{H}_2\text{S}] = 4.0 \text{ mol} / 3\text{L} = 1.33 \text{ mol/L}$$



$$K_{eq} = \frac{[\text{H}_2]^2 [\text{S}_2]}{[\text{H}_2\text{S}]^2}$$

$$K_{eq} = 2.4 \times 10^{-4}$$

$$2.4 \times 10^{-4} = \frac{(2x)^2 (x)}{(1.33)^2}$$

$$(2.4 \times 10^{-4})(1.33)^2 = (4x^2)(x)$$

$$4.25 \times 10^{-4} = 4x^3$$

$$x^3 = 4.25 \times 10^{-4} / 4$$

$$x^3 = 1.06 \times 10^{-4}$$

$$x = \sqrt[3]{1.06 \times 10^{-4}} = \underline{0.0473}$$

$$[\text{H}_2] = 2x = 2(0.0473) = \underline{0.095 \text{ mol/L}}$$