

Acids and Bases



#4

250.0 mL of a HNO_3 -solution contains 2.250 g HNO_3 . What is the pH of this solution?

Solution

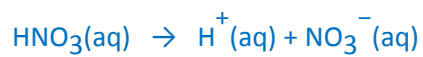
HNO_3 :

$$2.250 \text{ g} = \frac{2.250 \text{ g}}{63.0 \frac{\text{g}}{\text{mol}}} = 0.0357 \text{ mol}$$

$$\frac{0.0357 \text{ mol}}{0.2500 \text{ L}} = 0.143 \frac{\text{mol}}{\text{L}}$$

HNO_3 :

= strong acid, completely ionized



$$\Rightarrow [\text{H}^+] = 0.143 \text{ mol/L}$$

$$\Rightarrow \text{pH} = 0.85$$