بسم الله الرحمن الرحيم

BAHRIA COLLEGE ZAFAR CAMPUS E-8 ISLAMABAD

CLASS: 9TH

UNIT# 3

LOGARITHM

Q1. Use log tables to find the values of

    i.   **0.8176×13.64**

        Let $x = 0.8176 \times 13.64$

Taking log on both sides:

$$\log x = \log(0.8176 \times 13.64)$$

$$\log x = \log(0.8176) + \log(13.64)$$

$$\log x = \bar{1}.9125 + 1.1348$$

$$\log x = -1 + 0.9125 + 1 + 0.1348$$

$$\log x = 1.0473$$

To find 'x' take antilog on both sides:
$$Antilog(\log x) = Antilog(1.0473)$$

$$\mathbf{0.8176 \times 13.64} = x = 11.15$$

ii. $(789.5)^{\frac{1}{8}}$

$$\text{Let } x = (789.5)^{\frac{1}{8}}$$

Taking log on both sides:

$$\log x = \log(789.5)^{\frac{1}{8}}$$

$$\log x = \frac{1}{8}\log(789.5)$$

$$\log x = \frac{1}{8}(2.8974)$$

$$\log x = 0.3622$$

To find 'x' take antilog on both sides:

$$Antilog(\log x) = Antilog(0.3622)$$

$$(789.5)^{\frac{1}{8}} = x = 2.3025$$

iii. $\dfrac{0.678 \times 9.01}{0.0234}$

$$\text{Let; } x = \frac{0.678 \times 9.01}{0.0234}$$

Taking log on both sides:

$$\log x = \log\left(\frac{0.678 \times 9.01}{0.0234}\right)$$

$$\log x = \log(0.678) + \log(9.01) - \log 0.0234$$

$$\log x = \bar{1}.8312 + 0.9547 - \bar{2}.3692$$

$$\log x = -1 + 0.8312 + 0.9547 - (-2 + 0.3692)$$

$$\log x = -1 + 0.8312 + 0.9547 + 2 - 0.3692$$

$$\log x = 1 + 1.4167$$

$$\log x = 2.4167$$

To find 'x' take antilog on both sides:

$$Antilog(\log x) = Antilog(2.4167)$$

$$\frac{0.678 \times 9.0\bar{1}}{0.0234} = x = 261.03$$

To find 'x' take antilog on both sides:
$$Antilog(\log x) = Antilog(2.4167)$$

$$\frac{0.678 \times 9.01}{0.0234} = x = 261.03$$

iv.　　$$\sqrt[5]{2.709} \times \sqrt[7]{1.239}$$

Let $x = \sqrt[5]{2.709} \times \sqrt[7]{1.239}$

Taking log on both sides:

$$\log x = \log(\sqrt[5]{2.709} \times \sqrt[7]{1.239})$$

$$\log x = \log \sqrt[5]{2.709} + \log \sqrt[7]{1.239}$$

$$\log x = \frac{1}{5}\log 2.709 + \frac{1}{7}\log 1.239$$

$$\log x = \frac{1}{5}(0.4328) + \frac{1}{7}(0.0931)$$

$$\log x = 0.0866 + 0.0133$$

$$\log x = 0.0999$$

To find 'x' take antilog on both sides:
$$Antilog(\log x) = Antilog(0.0999)$$

$$\sqrt[5]{2.709} \times \sqrt[7]{1.239} = (789.5)^{\frac{1}{8}} = x = 1.2586$$