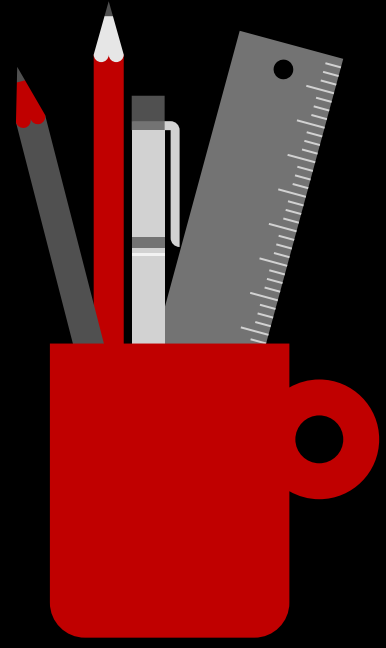


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3) Find the value of x in the following.

i) $\log_3 x = 5$
Exponential form

$$3^5 = x$$

$$x = 3 \times 3 \times 3 \times 3 \times 3$$

$$x = 243$$

ii) $\log_4 256 = x$

Exponential form

$$4^x = 256$$

$$(2 \times 2)^x = 2^8$$

$$2^{2x} = 2^8$$

$$2x = 8$$

$$x = \frac{8}{2}$$

$$x = 4$$

2	256
2	128
2	64
2	32
2	16
2	8
2	4
2	2
2	1

iii) $\log_{625} 5 = \frac{1}{4}x$

Exponential form

$$(625)^{\frac{1}{4}x} = 5$$

$$(5 \times 5 \times 5 \times 5)^{\frac{x}{4}} = 5^1$$

$$4 \times \frac{x}{4} = 5^1$$

$$5^x = 5^1$$

$$x = 1$$



$$3) \text{ iv) } \log_{64} x = -\frac{2}{3}$$

$$(64)^{-\frac{2}{3}} = x$$

$$(4 \times 4 \times 4)^{-\frac{2}{3}} = x$$

$$4^{3 \times -\frac{2}{3}} = x$$

$$4^{-2} = x$$

$$x = 4^{-2}$$

$$x = \frac{1}{4^2}$$

$$x = \frac{1}{16}$$



4

Find the value of x .

i

$$\log x = 2.4543$$

taking antilog of both sides

$$x = \text{antilog } 2.4543$$

$$\text{ch.} = 2, \quad \text{mantissa} = .4543$$

$$x = 2,84.64$$

$$x = \underline{\underline{284.64}}$$



$$\text{ii) } \log x = 0.1821$$

$$x = \text{antilog } 0.1821$$

$$\text{Ch.} = 0, \text{ mantissa} = .1821$$

$$x = 1.5209$$





$$\text{iii) } \log x = 0.0044$$

$$x = \text{antilog } 0.0044$$

$$\text{Ch.} = 0, \text{ Mantissa} = .0044$$

$$x = 1.0102$$





$$iv) \log x = \bar{1}.6238$$

$$x = \text{antilog } \bar{1}.6238$$

$$\text{Ch.} = \bar{1}, \text{ Mantissa} = .6238$$

$$x = 0.412053$$

$$x = \underline{\underline{0.4205}}$$



$$\textcircled{5} \log 2 = 0.3010, \log 3 = 0.4771, \log 5 = 0.6990$$

$$\textcircled{i} \log 45$$

$$= \log 3 \times 5 \times 3$$

$$= \log 3 + \log 5 + \log 3$$

$$= 0.4771 + 0.6990 + 0.4771$$

$$= \underline{\underline{1.6532}}$$



$$\text{ii) } \log \frac{16}{15}$$

$$= \log \frac{2 \times 2 \times 2 \times 2}{3 \times 5}$$

$$= \log \frac{2^4}{3 \times 5}$$

$$= \log 2^4 - \log 3 - \log 5$$

$$= 4 \log 2 - \log 3 - \log 5$$

$$= 4(0.3010) - 0.4771 - 0.6990$$

$$= 1.204 - 0.4771 - 0.6990$$

$$= 0.0279$$

==



$$\text{iii) } \log 0.048$$

$$= \log \frac{48}{1000}$$

$$= \log 48 - \log 1000$$

$$= \log 2 \times 2 \times 2 \times 2 \times 3 - \log 10^3$$

$$= \log 2^4 \times 3 - 3 \log 10$$

$$= \log 2^4 \times 3 - 3 \log (2 \times 5)$$

$$= \log 2^4 + \log 3 - 3[\log 2 + \log 5]$$

$$= 4 \log 2 + \log 3 - 3 \log 2 - 3 \log 5$$

$$= \cancel{4(0.3010)} + \cancel{(0.4771)} - 3(0.6990)$$

$$= \log 2 + \log 3 - 3 \log 5$$

$$= 0.3010 + 0.4771 - 3(0.6990)$$

$$= 0.7781 - 2.097$$

$$= -1.3189 + 2 - 2$$

$$= 0.6811 - 2$$

$$= \underline{\underline{-2.6811}}$$



6)

(i)

$$\sqrt[3]{25.47}$$

$$\text{Let } x = (25.47)^{1/3}$$

$$\log x = \log (25.47)^{1/3}$$

$$\log x = \frac{1}{3} \log 25.47$$

$$= \frac{1}{3} (1.4060)$$

$$\log x = 0.4687$$

$$x = \text{antilog } 0.4687$$

$$ch = 0, \text{ Mantissa} = 0.4687$$

$$x = \underline{\underline{2.9424}}$$



$$6 \quad \text{ii) } \sqrt[5]{342.2}$$

$$\text{Let } x = (342.2)^{1/5}$$

$$\log x = \log (342.2)^{1/5}$$

$$\log x = \frac{1}{5} \log 342.2$$

$$= \frac{1}{5} (2.5343)$$

$$\log x = 0.5069$$

$$x = \text{anti log } 0.5069$$

$$ch = 0, \text{ Mantissa} = 0.5069$$

$$x = \underline{\underline{3.2129}}$$



$$6) \text{ iii) } \frac{(8.97)^3 \times (3.95)^2}{\sqrt[3]{15.37}}$$

$$\text{let } x = \frac{(8.97)^3 \times (3.95)^2}{\sqrt[3]{15.37}}$$

$$\log x = \log \frac{(8.97)^3 \times (3.95)^2}{(15.37)^{1/3}}$$

$$\log x = \log (8.97)^3 + \log (3.95)^2 - \log (15.37)^{1/3}$$

$$\log x = 3 \log 8.97 + 2 \log 3.95 - \frac{1}{3} \log 15.37$$

$$= 3(0.9528) + 2(0.5966) - \frac{1}{3}(1.1867)$$

$$= 2.8584 + 1.1932 - 0.3956$$

$$= 3.6560$$

$$\log x = 3.6560$$

$$x = \text{antilog } 3.6560$$

$$\text{ch} = 3, \text{ Mantissa} = .6560$$

$$x = 4,529.0$$

$$x = \underline{\underline{4529.0}}$$