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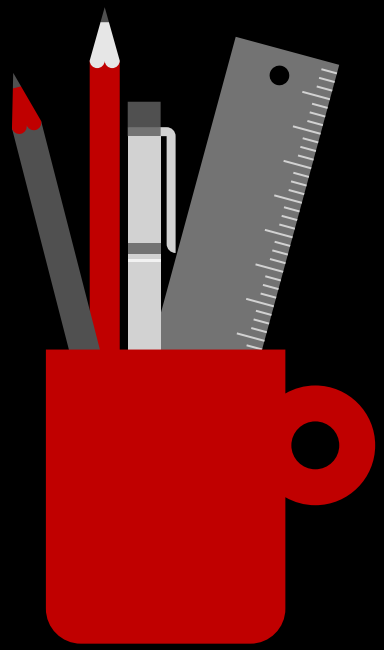

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Ex. 3.2

1) Find the common logarithm of each of the following numbers.

1) (i) 232.92

Let $x = 232.92$

$\log x = \log 232.92$

ch = 2

Mantissa = 0.3672

$\log x = 2 + 0.3672$

$\log x = 2.3672$

1.

ii) 29.326

Let $x = 29.326$

$\log x = \log 29.326$

ch. = 1

mantissa = 0.4672

$\log x = 1.4672$

1)

iii) 0.00032

Let $x = 0.00032$

$\log x = \log 0.00032$

$ch = \bar{4}$

Mantissa $= 0.5051$

$\log x = \bar{4}.5051$

1)

iv) 0.3206

let $x = 0.3206$

$\log x = \log 0.3206$

Ch. $= \bar{1}$

Mantissa $= 0.5059$

$= 0.5060$

$\log x = \bar{1}.5059$

2) If $\log 31.09 = \frac{1}{cn} . \underbrace{4926}_{m}$ Then find values

i) $\log 3.109$
$= 0.4926$

ii) $\log 310.9$
$= 2.4926$

iii) $\log 0.003109$
$= \bar{3}.4926$

iv) $\log 0.3109$
$= \bar{1}.4926$

3) Find the number whose logarithm are (i) 3.5621

$\log x = 3.5621$

taking antilog of both sides

$\text{Antilog} \cdot \log x = \text{anti\_log } 3.5621$

$x = 3648.4$

Ch = 3

Mantissa = 0.5621

3.6484

3648.4

3) ii) $\bar{1}.7427$

$\log x = \bar{1}.7427$

$x = \text{antilog } \bar{1}.7427$

$\therefore$ Ch. $= \bar{1}$, mantissa $= 0.7427$

$x = 0.5530$

$x = 0.5530$

$5.5300 \neq 9$

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(4)

(i) $\log_3 81 = L$

$3^L = 81$

$3^L = 3^4$

$L = 4$

$7^2 = 49$

$\log_7 49 = 2$

3	81
3	27
3	9
3	3
	1

4) ii) $\log_a 6 = 0.5$

Exponential form

$a^{0.5} = 6$

$(a^{0.5})^2 = (6)^2$

$a^1 = 36$

$\boxed{a = 36}$

4) iii) $\log_5 n = 2$

Exponential form

$5^2 = n$

$n = 5 \times 5$

$\boxed{n = 25}$

4) iv) $10^p = 40$

In logarithmic form

$\log_{10} 40 = p$

$p = 1.6021$

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5(i) Evaluate $\log_2 \frac{1}{128}$

Let $x = \log_2 \frac{1}{128}$

In Exponential form

$2^x = \frac{1}{128}$

$2^x = \frac{1}{2^7}$

$2^x = 2^{-7}$

$\boxed{x = -7}$

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

5) ii) $\log$ 512 to the base $2\sqrt{2}$

$\log_{2\sqrt{2}} 512$

Let $x = \log_{2\sqrt{2}} 512$

$(2\sqrt{2})^x = 512$

$(2^1 \cdot 2^{1/2})^x = 2^9$

$2^{\frac{3}{2}x} = 2^9$

$\frac{3}{2}x = 9$

$3x = 9 \times 2$

$3x = 18$

$x = \frac{18}{3}$

$x = 6$

$\boxed{x = 6}$

2	512
2	256
2	128
2	64
2	32
2	16
2	8
2	4
2	2
	1

6) (i) $\log_2 x = 5$

$2^5 = x$

$x = 2 \times 2 \times 2 \times 2 \times 2$

$\boxed{x = 32}$

6) ii) $\log_{81} 9 = x$

$81^{x} = 9$

$(9 \times 9)^{x} = 9$

$9^{2x} = 9^{1}$

$2x = 1$

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

6) iii) $\log_{64} 8 = \frac{x}{2}$

$(64)^{x/2} = 8$

$(8 \times 8)^{x/2} = 8$

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

$8^{x} = 8^{1}$

$x = 1$

6) iv) $\log_x 64 = 2$

Exponential form

$\sqrt{x^2} = \sqrt{64}$

$x = 8$

6) v) $\log_3 x = 4$

$3^4 = x$

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

$x = 243$


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