



NALANDA COLLEGE - COLOMBO 10

Grade 11

Mathematics

Unit Test

2) , 3) Indices and Logarithms I , II

Part I

1. Evaluate.

$$\frac{2^3 \times 2^{-3}}{2^2}$$

2. Simplify and give the answer as a positive index.

$$\frac{1}{2\sqrt{x^{-3}}}$$

3. Evaluate.

$$\left(\frac{1}{32}\right)^{-\frac{4}{3}}$$

4. Simplify and express the answer with positive index.

$$\sqrt[3]{a^2} \times \sqrt{a^{-3}}$$

5. Simplify. $\frac{a^{\frac{1}{2}} \times a^{\frac{1}{4}}}{a}$

6. Find the value of $a^{\frac{1}{3}} \times b^{\frac{1}{2}}$ when $a = 8$ and $b = 25$.

7. Evaluate. $27^{-1\frac{1}{3}}$

8. Solve. $9^{x-2} = 3$

9. Find the value. $\log_2 256$

10. Solve $\log_2 8 + \log_2 2 = 2\log_2 x$

Part II

- 1) a) i. Solve $2\lg 6 + 3\lg 6 = \lg 2^3 + \lg x$

ii. Evaluate $\log_3 \sqrt[4]{81}$

- b) Find the value of V to the nearest second decimal place when $\pi = 3.14$, $r = 0.7\text{cm}$ in the formula

$$V = \frac{4}{3}\pi r^3$$

- 2) a) i. Evaluate $\log_2 \frac{1}{64} + \log_2 \frac{4}{7} - \log_2 \frac{2}{7}$

ii. Solve $\lg 8 - \lg 4 = \lg x - \lg 2$

- b) If $\pi = 3.14$ find the area of a small circle of radius 0.95cm using the logarithmic tables.

- 3) a) Solve the following equations.

i. $\lg 125 - 2\lg x = \lg 5 - 2\lg 3$

ii. $\frac{3}{4}\log_a 16 = \log_a x^{\frac{1}{2}}$

- b) The volume of a cone is given by the formula, $V = \frac{1}{3}\pi r^2 h$. Using logarithmic tables find the volume (V) of a cone when $\pi = 3.14$, $r = 7.5\text{cm}$ and $h = 10.1\text{cm}$.