EduSahara™ Assignment

Name : Logarithms involving variables

Chapter : Real Numbers

Grade : SSC Grade X

1. Express $log_{10}\frac{x^4y^2}{z^3}$ in terms of $log_{10}x$, $log_{10}y$ and $log_{10}z$

(i) $4log_{10}x-2log_{10}y-3log_{10}z$ (ii) $4log_{10}x+2log_{10}y+3log_{10}z$ (iii) $4log_{10}x-2log_{10}y+3log_{10}z$

(iv) $4log_{10}x+2log_{10}y-3log_{10}z$ (v) $4log_{10}x-3log_{10}z+2log_{10}y$

2. If $log_4y+2log_4x=2$ express y in terms of x

(i) $y=\frac{x^2}{16}$ (ii) $y=\frac{x}{16}$ (iii) $y=\frac{16}{x^2}$ (iv) $y=\frac{16}{x}$

3. Express $log_9\frac{a^4c^3}{\sqrt{b}}$ in terms of log_9a , log_9b and log_9c

(i) $4log_9a+3log_9c-\frac{1}{2}log_9b$ (ii) $4log_9a-3log_9c+\frac{1}{2}log_9b$ (iii) $4log_9a+3log_9c+\frac{1}{2}log_9b$

(iv) $4log_9a-3log_9c-\frac{1}{2}log_9b$ (v) $3log_9c-\frac{1}{2}log_9b+4log_9a$

4. Express $log_6\frac{\sqrt{p^2q^5}}{r^5s^4}$ in terms of log_6p , log_6q , log_6r and log_6s

(i) $log_6p-\frac{5}{2}log_6q+5log_6r-4log_6s$ (ii) $log_6p-\frac{5}{2}log_6q-5log_6r+4log_6s$

(iii) $log_6p+\frac{5}{2}log_6q+5log_6r-4log_6s$ (iv) $log_6p-\frac{5}{2}log_6q-5log_6r-4log_6s$

(v) $log_6p+\frac{5}{2}log_6q-5log_6r-4log_6s$

5. If $log_3x=p$ and $log_3y=q$, then $xy=$

(i) $3^{(p-q)}$ (ii) 3^{2pq} (iii) $3^{(p+q)}$ (iv) 3^{pq}

6. If $log_4x=p$ and $log_4y=q$, then $\frac{x}{y}=$

(i) $4^{(p-q)}$ (ii) 4^{pq} (iii) 4^{2pq} (iv) $4^{(p+q)}$

7. If $\log_7 x = a$ and $\log_7 y = b$, then $7^{(a+1)} =$

(i) $7x$ (ii) $7b$ (iii) $7y$ (iv) 7 (v) $7a$

8. If $\log_9 x = a$ and $\log_9 y = b$, then $9^{(a+b)} =$

(i) ab (ii) yb (iii) ax (iv) xy (v) 9

9. If $\log_2 x = a$ and $\log_2 y = b$, then $2^{(a-b)} =$

(i) $\frac{x}{y}$ (ii) $\frac{x}{b}$ (iii) $\frac{y}{x}$ (iv) $\frac{a}{y}$ (v) $\frac{a}{b}$

10. If $\log_4 x = a$ and $\log_4 y = b$, then $4^{4b} =$

(i) a^4 (ii) x^4 (iii) $4b$ (iv) y^4 (v) $4y$

11. Express $\log\ p^3q^3$ in terms of $\log p$ and $\log q$

(i) $\frac{\log p}{\log q}$ (ii) $3\log p - 3\log q$ (iii) $3\log p + 3\log q$ (iv) $3\log q - 3\log p$

12. Express $\log \sqrt{p^2q^2}$ in terms of $\log p$ and $\log q$

(i) $2\log p - 2\log q$ (ii) $2\log p + 2\log q$ (iii) $2\log q - 2\log p$ (iv) $\frac{\log p}{\log q}$ (v) $\log p + \log q$

13. Express $\log \sqrt[3]{p^2q}$ in terms of $\log p$ and $\log q$

(i) $\frac{2\log p}{\log q}$ (ii) $2\log p - \log q$ (iii) $\frac{2}{3}\log p + \frac{1}{3}\log q$ (iv) $2\log p + \log q$ (v) $\log q - 2\log p$

14. Express $\log \frac{p^2}{q^3}$ in terms of $\log p$ and $\log q$

(i) $2\log p - 3\log q$ (ii) $3\log q - 2\log p$ (iii) $2\log p + 3\log q$ (iv) $\frac{\frac{2}{3}\log p}{\log q}$

15. Express $\log \sqrt{\frac{p^2}{q^5}}$ in terms of $\log p$ and $\log q$

(i) $\frac{\frac{2}{5}\log p}{\log q}$ (ii) $\log p - \frac{5}{2}\log q$ (iii) $\frac{5}{2}\log q - \log p$ (iv) $\log p + \frac{5}{2}\log q$

16. If $(x^2+y^2)=34xy$, then $2\log(x+y)=$

(i) $\log x+\log y-2\log 6$ (ii) $\log x+\log y+2\log 6$ (iii) $\log x-\log y-2\log 6$ (iv) $\log x-\log y+2\log 6$

17. If $(x^2+y^2)=11xy$, then $\log(x-y)=$

(i) $\frac{1}{2}\log x+\frac{1}{2}\log y+\log 3$ (ii) $\frac{1}{2}\log x-\frac{1}{2}\log y-\log 3$ (iii) $\frac{1}{2}\log x+\frac{1}{2}\log y-\log 3$

(iv) $\frac{1}{2}\log x-\frac{1}{2}\log y+\log 3$

18. If $(x^4+y^4)=47x^2y^2$, then $\log(x^2+y^2)=$

(i) $\log x-\log y-\log 7$ (ii) $\log x-\log y+\log 7$ (iii) $\log x+\log y+\log 7$ (iv) $\log x+\log y-\log 7$

19. If $x=\frac{y^2}{(y-1)}$, then $\log(x-y)=$

(i) $\frac{\log x}{\log y}$ (ii) $\log x-\log y$ (iii) $\log x+\log y$ (iv) $\log x\log y$

20. If $(x^2+y^2)=z^2$, then which of the following is true?

(i) $\log_x(z+y)+\log_x(z-y)=2$ (ii) $\log_x(z+y)-\log_x(z-y)=2$ (iii) $\log_x(z+y)+\log_x(z-y)=5$ (iv) $\frac{\log(z+y)}{\log(z-y)}=3$

(v) $\log_x(z+y)+\log_x(z-y)=4$

21. If $(x^3+y^3)=z^3$, then which of the following is true?

(i) $\log_x(z-y)+\log_x(z^2+zy+y^2)=3$ (ii) $\log_x(z-y)-\log_x(z^2+zy+y^2)=3$ (iii) $\log_x(z-y)+\log_x(z^2+zy+y^2)=6$

(iv) $\frac{\log(z-y)}{\log(z^2+zy+y^2)}=4$ (v) $\log_x(z-y)+\log_x(z^2+zy+y^2)=5$

22. If $(x^4+y^4)=z^4$, then which of the following is true?

(i) $\log_x(z^2-y^2)+\log_x(z^2+y^2)=4$ (ii) $\log_x(z^2-y^2)+\log_x(z^2+y^2)=6$ (iii) $\frac{\log(z^2-y^2)}{\log(z^2+y^2)}=5$

(iv) $\log_x(z^2-y^2)-\log_x(z^2+y^2)=4$ (v) $\log_x(z^2-y^2)+\log_x(z^2+y^2)=7$

23. If $x=1+\log_c ab$; $y=1+\log_a bc$; $z=1+\log_b ac$,
then which of the following is true?

(i) $(xy+xz+yz)=xyz$ (ii) $(x+y+z)=xyz$ (iii) $(xy-xz+yz)=xyz$ (iv) $(xy+xz-yz)=xyz$

(v) $(xy-xz-yz)=xyz$

Assignment Key

1) (iv)	2) (iii)	3) (i)	4) (v)	5) (iii)	6) (i)
7) (i)	8) (iv)	9) (i)	10) (iv)	11) (iii)	12) (v)
13) (iii)	14) (i)	15) (ii)	16) (ii)	17) (i)	18) (iii)
19) (ii)	20) (i)	21) (i)	22) (i)	23) (i)	