EduSahara™ Assignment

Name : Logarithms involving variables

Chapter : Real Numbers

Grade : SSC Grade X

1. Express $log_{10}\frac{x^2y^4}{z^5}$ in terms of $log_{10}x$, $log_{10}y$ and $log_{10}z$

(i) $2log_{10}x-4log_{10}y+5log_{10}z$ (ii) $2log_{10}x-4log_{10}y-5log_{10}z$ (iii) $2log_{10}x-5log_{10}z+4log_{10}y$

(iv) $2log_{10}x+4log_{10}y-5log_{10}z$ (v) $2log_{10}x+4log_{10}y+5log_{10}z$

2. If $log_{10}y+3log_{10}x=2$ express y in terms of x

(i) $y=\frac{100}{x^3}$ (ii) $y=\frac{x}{100}$ (iii) $y=\frac{x^3}{100}$ (iv) $y=\frac{100}{x}$

3. Express $log_6\frac{ac^4}{\sqrt{b}}$ in terms of log_6a , log_6b and log_6c

(i) $log_6a-4log_6c-\frac{1}{2}log_6b$ (ii) $log_6a-4log_6c+\frac{1}{2}log_6b$ (iii) $log_6a+4log_6c+\frac{1}{2}log_6b$

(iv) $4log_6c-\frac{1}{2}log_6b+log_6a$ (v) $log_6a+4log_6c-\frac{1}{2}log_6b$

4. Express $log_8\frac{\sqrt{p^2q^3}}{r^4s}$ in terms of log_8p , log_8q , log_8r and log_8s

(i) $log_8p-\frac{3}{2}log_8q-4log_8r+log_8s$ (ii) $log_8p+\frac{3}{2}log_8q-4log_8r-log_8s$

(iii) $log_8p+\frac{3}{2}log_8q+4log_8r-log_8s$ (iv) $log_8p-\frac{3}{2}log_8q-4log_8r-log_8s$

(v) $log_8p-\frac{3}{2}log_8q+4log_8r-log_8s$

5. If $log_7x=p$ and $log_7y=q$, then $xy=$

(i) 7^{pq} (ii) $7^{(p+q)}$ (iii) 7^{2pq} (iv) $7^{(p-q)}$

6. If $log_3x=p$ and $log_3y=q$, then $\frac{x}{y}=$

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

7. If $\log_2 x = a$ and $\log_2 y = b$, then $2^{(a+1)} =$

(i) $2x$ (ii) $2b$ (iii) 2 (iv) $2y$ (v) $2a$

8. If $\log_4 x = a$ and $\log_4 y = b$, then $4^{(a+b)} =$

(i) yb (ii) xy (iii) ax (iv) 4 (v) ab

9. If $\log_5 x = a$ and $\log_5 y = b$, then $5^{(a-b)} =$

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

10. If $\log_2 x = a$ and $\log_2 y = b$, then $2^{4b} =$

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

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

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

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

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

13. Express $\log \sqrt[3]{p^3 q^5}$ in terms of $\log p$ and $\log q$

(i) $3\log p - 5\log q$ (ii) $3\log p + 5\log q$ (iii) $\log p + \frac{5}{3}\log q$ (iv) $\frac{\frac{3}{5}\log p}{\log q}$ (v) $5\log q - 3\log p$

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

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

15. Express $\log \sqrt{\frac{p^3}{q^5}}$ in terms of $\log p$ and $\log q$

(i) $\frac{3}{2}\log p + \frac{5}{2}\log q$ (ii) $\frac{\frac{3}{5}\log p}{\log q}$ (iii) $\frac{3}{2}\log p - \frac{5}{2}\log q$ (iv) $\frac{5}{2}\log q - \frac{3}{2}\log p$

16. If $(x^2+y^2)=23xy$, then $2\log(x+y)=$

(i) $\log x-\log y-2\log 5$ (ii) $\log x-\log y+2\log 5$ (iii) $\log x+\log y+2\log 5$ (iv) $\log x+\log y-2\log 5$

17. If $(x^2+y^2)=38xy$, then $\log(x-y)=$

(i) $\frac{1}{2}\log x-\frac{1}{2}\log y+\log 6$ (ii) $\frac{1}{2}\log x+\frac{1}{2}\log y+\log 6$ (iii) $\frac{1}{2}\log x+\frac{1}{2}\log y-\log 6$

(iv) $\frac{1}{2}\log x-\frac{1}{2}\log y-\log 6$

18. If $(x^4+y^4)=7x^2y^2$, then $\log(x^2+y^2)=$

(i) $\log x-\log y-\log 3$ (ii) $\log x+\log y+\log 3$ (iii) $\log x-\log y+\log 3$ (iv) $\log x+\log y-\log 3$

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

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

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

(i) $\log_x(z+y)+\log_x(z-y)=5$ (ii) $\log_x(z+y)+\log_x(z-y)=4$ (iii) $\log_x(z+y)+\log_x(z-y)=2$

(iv) $\log_x(z+y)-\log_x(z-y)=2$ (v) $\frac{\log(z+y)}{\log(z-y)}=3$

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

(iv) $\log_x(z-y)+\log_x(z^2+zy+y^2)=5$ (v) $\log_x(z-y)+\log_x(z^2+zy+y^2)=6$

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

(i) $\frac{\log(z^2-y^2)}{\log(z^2+y^2)}=5$ (ii) $\log_x(z^2-y^2)+\log_x(z^2+y^2)=6$ (iii) $\log_x(z^2-y^2)+\log_x(z^2+y^2)=7$

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

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) $(xy+xz-yz)=xyz$ (iii) $(xy-xz+yz)=xyz$ (iv) $(xy+xz+yz)=xyz$

(v) $(x+y+z)=xyz$

Assignment Key

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