EduSahara™ Worksheet

Name : Chapter Based Worksheet

Chapter : Indices

Grade : ICSE Grade IX



1. $\left[\left(\frac{9}{6}\right)^{-9} \times \left(\frac{4}{8}\right)^{-9}\right] \div \left[\left(\frac{6}{9}\right)^{9} \times \left(\frac{8}{4}\right)^{9}\right] =$

(i) (-1) (ii) $\frac{9}{6}$ (iii) 1 (iv) $\frac{4}{8}$ (v) 0

2. Find the square root of $a^{(2w+2)} . b^{2w} . c^{(2w-2)}$

(i) $a^{(w+1)} . b^{w} . c^{(w-1)}$ (ii) $a^{(w-1)} . b^{w} . c^{(w+1)}$ (iii) $2\, a^{(w+1)} . 2\, b^{w} . 2\, c^{(w-1)}$ (iv) $a^{(w+1)} . b^{2w} . c^{(w-1)}$

3. Find the square root of $\frac{9\, q^{10}}{25\, r^{4}}$

(i) $\frac{3\, q^{5}}{5\, r^{2}}$ (ii) $\frac{3\, q^{5}}{5\, r^{4}}$ (iii) $\frac{3\, q^{10}}{5\, r^{4}}$ (iv) $\frac{3\, q^{10}}{5\, r^{2}}$ (v) $\frac{3\, q^{20}}{5\, r^{8}}$

4. Find the 6th root of 64

(i) -1 (ii) 3 (iii) 4 (iv) 1 (v) 2

5. Find the 4th root of $\frac{81}{16}$

(i) 2 (ii) $\frac{1}{2}$ (iii) $\frac{5}{4}$ (iv) $\frac{3}{2}$ (v) $\frac{5}{2}$

6. Which of the following statements are true?

a) $a . x^{m} = a^{m} . x^{m}$

b) $a^{0} = 1 \ (a \neq 0)$

c) $a^{m} . a^{n} = a^{mn}$

d) $\left(x^{m}\right)^{n} = x^{(m+n)}$

e) $\left(x^{m}\right)^{n} = \left(x^{n}\right)^{m}$

f) $\frac{x^{m}}{x^{n}} = x^{\frac{m}{n}}$

(i) {d,f,b} (ii) {c,e} (iii) {b,e} (iv) {a,b} (v) {a,e,b}

7. Find the cube root of 125

(i) 3 (ii) 4 (iii) 5 (iv) 7 (v) 6

8. Evaluate $\left(f^{\frac{1}{2}} + g^{\frac{1}{2}}\right)\left(f^{\frac{1}{2}} - g^{\frac{1}{2}}\right) =$

(i) $(f-g)$ (ii) $(f+g)^2$ (iii) $(f+g)$ (iv) 0 (v) 1

9. $\frac{a^{20}\,b^{19}}{a^4\,b^5} =$

(i) $a^{24}\,b^{14}$ (ii) $a^{24}\,b^{24}$ (iii) $a^{39}\,b^9$ (iv) $a^{16}\,b^{14}$ (v) $a^{16}\,b^{24}$

10. If $125^{(v+3)} = 625^{12} = 5^{w}$, find $w$

(i) 50 (ii) 47 (iii) 48 (iv) 46 (v) 49

11. If $343000 = r^3 \times s^3 \times t^3$, find $r, s, t$

(i) (9,2,5) (ii) (7,2,7) (iii) (7,2,5) (iv) (7,4,5) (v) (9,2,3)

12. Expand the following base power $\left(\frac{-4}{5}\right)^2$

(i) $(\frac{-4}{5})$ (ii) $\frac{4}{25}$ (iii) $\frac{16}{25}$ (iv) $\frac{36}{25}$ (v) $(\frac{-64}{125})$

13. $\frac{x^{17}}{x^8} =$

(i) $x^{25}$ (ii) $x^{136}$ (iii) $x^9$ (iv) $17\,x^9$ (v) $8\,x^9$

14. Find the 4th root of 256

(i) 4 (ii) 5 (iii) 3 (iv) 1 (v) 7

15. If $2^{u} = 4$, find $2^{(u+3)}$

(i) 34 (ii) 29 (iii) 31 (iv) 32 (v) 33

16. $(g^3h^6)^9 =$

(i) $g^{12}\,h^{15}$ (ii) $9\,g^{12}\,h^{15}$ (iii) $9\,g^{27}\,h^{54}$ (iv) $g^{27}\,h^{54}$ (v) $9\,g^3\,h^6$

17. The value of $5^2 + 2^2$

(i) $29^2$ (ii) 28 (iii) 31 (iv) 26 (v) 29

18. $\left[ {}_{6}^{\left(\frac{5}{3}\right)} \right]^{5} =$

(i) ${}_{6}^{\left(\frac{41}{5}\right)}$ (ii) ${}_{3}^{\left(\frac{25}{3}\right)}$ (iii) ${}_{6}^{\left(\frac{25}{3}\right)}$ (iv) ${}_{9}^{\left(\frac{25}{3}\right)}$ (v) $6^{9}$

19. The value of $\left(\frac{-5}{3}\right)^{2} - \left(\frac{5}{2}\right)^{3}$

(i) $\left(\frac{-103}{8}\right)$ (ii) $\left(\frac{-925}{72}\right)$ (iii) $\left(\frac{-925}{72}\right)^{2}$ (iv) $\left(\frac{-923}{72}\right)$ (v) $\left(\frac{-185}{14}\right)$

20. $\left(b^{2}.c^{(-4)}\right)^{3} =$

(i) $b^{5}.c^{(-1)}$ (ii) $b^{6}.c^{(-12)}$ (iii) $b^{(-1)}.c^{(-7)}$ (iv) $b^{4}.c^{(-12)}$ (v) $b^{6}.c^{(-8)}$

21. Simplify $\frac{(-2)^{-2}\times 3^{2}\times(-3)^{-2}\times(-3)^{-2}}{(-5)^{2}\times 2^{-2}\times 5^{2}\times(-2)^{2}}$

(i) $152^{-2}$ (ii) $150^{-2}$ (iii) $150^{-1}$ (iv) $150^{-3}$ (v) $147^{-2}$

22. $\sqrt{\frac{1}{9}} =$

(i) $\frac{1}{3}$ (ii) $\left(\frac{-1}{3}\right)$ (iii) $\frac{1}{5}$ (iv) $1$

23. Evaluate $\left(a^{2}+b^{2}\right)\left(a^{4}-a^{2}b^{2}+b^{4}\right) =$

(i) $a^{6}+b^{6}$ (ii) $a^{6}-2b^{2}a^{4}+2b^{4}a^{2}-b^{6}$ (iii) $a^{6}-b^{6}$ (iv) $0$ (v) $a^{6}+2b^{2}a^{4}+2b^{4}a^{2}+b^{6}$

24. Evaluate $\left(d^{\frac{1}{3}}-e^{\frac{1}{3}}\right)\left(d^{\frac{2}{3}}+d^{\frac{1}{3}}e^{\frac{1}{3}}+e^{\frac{2}{3}}\right) =$

(i) $(d+e)^{2}$ (ii) $d+e$ (iii) $d-e$ (iv) $0$ (v) $(d-e)^{2}$

25. Simplify $\frac{2^{2}\times(-5)^{2}\times 5^{2}}{(-2)^{-2}\times 3^{2}\times(-5)^{-2}}$

(i) $\left(\frac{500}{3}\right)^{2}$ (ii) $\left(\frac{502}{3}\right)^{2}$ (iii) $166^{2}$ (iv) $\left(\frac{500}{3}\right)^{3}$ (v) $\frac{500}{3}$

## Assignment Key

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|---|---|---|---|---|---|
| 1) (iii) | 2) (i) | 3) (i) | 4) (v) | 5) (iv) | 6) (iii) |
| 7) (iii) | 8) (i) | 9) (iv) | 10) (iii) | 11) (iii) | 12) (iii) |
| 13) (iii) | 14) (i) | 15) (iv) | 16) (iv) | 17) (v) | 18) (iii) |
| 19) (ii) | 20) (ii) | 21) (ii) | 22) (i) | 23) (i) | 24) (iii) |
| 25) (i) | | | | | |