EduSahara™ Worksheet

Name : Chapter Based Worksheet

Chapter : Indices

Grade : ICSE Grade IX

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1. Evaluate $\left(b^{\frac{1}{3}} - c^{\frac{1}{3}}\right)\left(b^{\frac{2}{3}} + b^{\frac{1}{3}}c^{\frac{1}{3}} + c^{\frac{2}{3}}\right) =$

   (i) $(b-c)^2$ (ii) 0 (iii) $b+c$ (iv) $(b+c)^2$ (v) $b-c$

2. Find the 6th root of 729

   (i) 3 (ii) 4 (iii) 1 (iv) 5 (v) 2

3. Simplify $\dfrac{\sqrt{16}-\sqrt{64}}{\sqrt{144}+\sqrt{49}} =$

   (i) $\left(\frac{-4}{17}\right)$ (ii) $\left(\frac{-2}{19}\right)$ (iii) $\left(\frac{-4}{21}\right)$ (iv) $\left(\frac{-6}{19}\right)$ (v) $\left(\frac{-4}{19}\right)$

4. Simplify $\dfrac{\sqrt[3]{64}+\sqrt[3]{216}}{\sqrt[3]{729}-\sqrt[3]{8}} =$

   (i) $\frac{12}{7}$ (ii) $\frac{10}{7}$ (iii) 2 (iv) $\frac{8}{7}$ (v) $\frac{10}{9}$

5. Simplify the expression $6^6 \times 6^6 \times 6^6$

   (i) 6^{18} (ii) 6^{19} (iii) 3^{18} (iv) 8^{18} (v) 6^{17}

6. $9x^8.7x^9.4x^2.8x^3 =$

   (i) $19x^{504}$ (ii) $24x^{216}$ (iii) $2016x^{22}$ (iv) $504x^{216}$ (v) $24x^{19}$

7. Evaluate $\left(a^{\frac{1}{2}} + b^{\frac{1}{2}}\right)\left(a^{\frac{1}{2}} - b^{\frac{1}{2}}\right) =$

   (i) $(a-b)$ (ii) $(a+b)^2$ (iii) 1 (iv) 0 (v) $(a+b)$

8. The value of $\left(\frac{1}{3}\right)^{-3} - \left(\frac{-1}{2}\right)^{-2}$

   (i) 22 (ii) 26 (iii) 21 (iv) 23 (v) 23^2

9. Which of the following statements are true?

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

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

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

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

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

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

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

10. $\left(\frac{d^{2}}{e^{7}}\right)^{j} =$

(i) $\frac{e^{7j}}{d^{2j}}$ (ii) $d^{2j}. - e^{7j}$ (iii) $d^{2j}.e^{7j}$ (iv) $\frac{d^{2j}}{e^{7j}}$

11. The value of $\left(\frac{3}{2}\right)^{3} \times \left(\frac{-1}{3}\right)^{3}$

(i) $\left(\frac{-3}{8}\right)$ (ii) $\left(\frac{-1}{8}\right)$ (iii) $\left(\frac{-1}{6}\right)$ (iv) $\left(\frac{-1}{8}\right)^{2}$ (v) $\frac{1}{8}$

12. Expand the following base power 2^{-5}

(i) $\frac{1}{16}$ (ii) -1 (iii) $\frac{1}{64}$ (iv) $\frac{1}{32}$ (v) $\frac{1}{1024}$

13. Find the cube root of $\left(\frac{-125}{27}\right)$

(i) $\left(\frac{-5}{3}\right)$ (ii) -1 (iii) -5 (iv) $\left(\frac{-7}{3}\right)$

14. Simplify $\frac{5^{-2} \times (-3)^{-2} \times 2^{-3} \times (-2)^{-3}}{2^{-2} \times (-4)^{-2} \times 3^{-2}}$

(i) $\frac{-2 \times 1}{5^{2}}$ (ii) $\frac{-1 \times 1}{7^{2}}$ (iii) $\frac{-1 \times 1}{5^{2}}$ (iv) $\frac{(-1)^{2} \times 1}{5^{2}}$ (v) $\frac{-1 \times 1}{2^{2}}$

15. Find the reciprocal of $\left(\frac{-9}{4}\right)^{9}$

(i) $\left(\frac{-2}{9}\right)^{9}$ (ii) $\left(\frac{-4}{9}\right)^{10}$ (iii) $\left(\frac{-4}{9}\right)^{8}$ (iv) $\left(\frac{-4}{9}\right)^{9}$ (v) $\left(\frac{-2}{3}\right)^{9}$

16. Simplify the expression $(-7)^{-3} \times (-7)^{-3} \times (-7)^{-3}$

(i) $(-4)^{-9}$ (ii) $(-7)^{-9}$ (iii) $(-7)^{-8}$ (iv) $(-9)^{-9}$ (v) $(-7)^{-10}$

17. $\left(\frac{n^{20}}{n^{5}}\right)^{4} =$

(i) $4n^{25}$ (ii) n^{400} (iii) $4n^{15}$ (iv) n^{100} (v) n^{60}

18. If $7^{(3n+3)} \div 343 = 7^{6}$, find n

(i) 3 (ii) 1 (iii) 4 (iv) 2 (v) 0

19. Simplify $\left(\frac{t^{k}}{t^{l}}\right)^{m} \left(\frac{t^{l}}{t^{m}}\right)^{k} \left(\frac{t^{m}}{t^{k}}\right)^{l}$

(i) -1 (ii) 0 (iii) $t^{(k+l+m)}$ (iv) 1 (v) t

20. Expand the following base power $(-5)^{-2}$

(i) $\frac{1}{64}$ (ii) $\left(\frac{-1}{125}\right)$ (iii) $\frac{1}{4}$ (iv) $\frac{1}{25}$ (v) $\left(\frac{-1}{5}\right)$

21. If $4^{(7v+2)} = 64^{(2v+6)}$, find v

(i) 17 (ii) 15 (iii) 16 (iv) 18 (v) 14

22. The value of $5^{-3} - 4^{-3}$

(i) $\left(\frac{-61}{8000}\right)^{2}$ (ii) $\left(\frac{-63}{8000}\right)$ (iii) $\left(\frac{-61}{8000}\right)$ (iv) $\left(\frac{-61}{7998}\right)$ (v) $\left(\frac{-59}{8000}\right)$

23. $\left(f^{8} + g^{8}\right)^{0} =$

(i) (-1) (ii) 1 (iii) 0 (iv) $f^{8} + g^{8}$ (v) 3

24. Simplify $\frac{(-3)^2 \times 4^2 \times (-4)^2}{3^3 \times 3^2 \times (-2)^3 \times 5^2}$

(i) $\frac{-1 \times 2^5}{3^3 \times 5^2}$ (ii) $\frac{(-1)^2 \times 2^5}{3^3 \times 5^2}$ (iii) $\frac{-1 \times 2^5}{3^3 \times 7^2}$ (iv) $\frac{-1 \times 2^5}{0 \times 5^2}$ (v) $\frac{-1 \times 2^4}{3^3 \times 5^2}$

25. Simplify the expression $(-6)^9 \times (-6)^9$

(i) $(-6)^{19}$ (ii) $(-6)^{18}$ (iii) $(-6)^{17}$ (iv) $(-4)^{18}$ (v) $(-8)^{18}$

Assignment Key

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

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