

Indices

Q1. Evaluate the followings.

a) $25^{1/2}$

b) $144^{1/2}$

c) $125^{1/3}$

d) $625^{1/4}$

e) $16^{-1/2}$

f) $8^{-1/3}$

g) $81^{-1/4}$

h) $3125^{-1/5}$

Q2. Evaluate the following.

a) $32^{4/5}$

b) $125^{2/3}$

c) $1296^{3/4}$

d) $243^{4/5}$

Q3. Rewrite the following in index form.

a) $3\sqrt{x^5}$

b) $4\sqrt{n^3}$

c) $7\sqrt{k^6}$

d) $\sqrt{x^7}$

Q4. Evaluate

a. $\left(\frac{25}{36}\right)^{\frac{1}{2}} =$ _____

b. $\left(\frac{81}{64}\right)^{\frac{1}{2}} =$ _____

c. $\left(\frac{27}{125}\right)^{\frac{1}{3}} =$ _____

d. $\left(\frac{1000}{64}\right)^{\frac{1}{3}} =$ _____

e. $\left(\frac{16}{81}\right)^{-\frac{1}{4}} =$ _____

f. $\left(\frac{8}{512}\right)^{-\frac{1}{3}} =$ _____

Q5. Evaluate the following.

a) $16^{-1/2}$

b) $8^{-1/3}$

c) $32^{-1/5}$

d) $27^{-1/3}$

Q6. Evaluate the following.

a $100^{-5/2}$

b $144^{-1/2}$

c $125^{-2/3}$

d $9^{-3/2}$

e $64^{-4/3}$

f $8^{-2/3}$

g $32^{-2/5}$

h $27^{-2/3}$

Q7. Change each of the fraction to index form.

a. $\frac{7}{x^3}$

b. $\frac{2}{p}$

c. $\frac{5}{t^2}$

d. $\frac{8}{\sqrt{m}}$

Q8. Find the value of each of the following, where the letters have the given values.

a Where $x = 6$

i x^2

ii $x^{-3/4}$

iii $4x^{-1}$

b Where $w = -3$

i w^6

ii w^{-4}

iii $25w^{-2}$

Q9. You are given that $a = 5^m$ and $b = 5^n$ Write each of the following as a single power of 5

i. $ab =$ _____ ii. $a^2 =$ _____

iii. $b/a =$ _____ iv. $(ab)^2 =$ _____

Q10. For $t > 1$, write the following expressions in order of size. Start with the expression with the least value.

t^0

t^2

t

t^2

$t^{1/2}$

Q11. Simplify

$$(2x^2y^{-1})^2 = \underline{\hspace{2cm}}$$

$$(4x^{-3}y^1)^2 = \underline{\hspace{2cm}}$$

$$(3a^2b^{-1})^3 = \underline{\hspace{2cm}}$$

$$(2x^3y^{-2})^{-2} = \underline{\hspace{2cm}}$$

$$(5x^{-2}y^{-3})^{-1} = \underline{\hspace{2cm}}$$

$$(3p^2q^{-3})^2 = \underline{\hspace{2cm}}$$

Q12. Simplify

$$(16x^2y^4)^{\frac{1}{2}} = \underline{\hspace{2cm}}$$

$$(8a^3b^6)^{\frac{1}{3}} = \underline{\hspace{2cm}}$$

$$(9x^2y^6)^{\frac{1}{2}} = \underline{\hspace{2cm}}$$

$$(25x^4y^2)^{\frac{1}{2}} = \underline{\hspace{2cm}}$$

$$(27a^3b^6)^{\frac{2}{3}} = \underline{\hspace{2cm}}$$

$$(16m^4n^8)^{\frac{3}{4}} = \underline{\hspace{2cm}}$$

Q13. Simplify fully

$$(x^2)^{\frac{1}{2}} \times (x^3)^{\frac{1}{6}} = \underline{\hspace{2cm}}$$

$$(s^2)^{\frac{1}{3}} \times (s^3)^{\frac{1}{2}} = \underline{\hspace{2cm}}$$

$$(x^3)^{\frac{1}{2}} \times (x^2)^{\frac{1}{6}} = \underline{\hspace{2cm}}$$

$$(x^4)^{\frac{1}{2}} \times (x^2)^{\frac{1}{6}} = \underline{\hspace{2cm}}$$

$$(m^3)^{\frac{1}{6}} \times (m^3)^{\frac{1}{9}} = \underline{\hspace{2cm}}$$

$$(p^4)^{\frac{1}{2}} \times (p^3)^{\frac{1}{6}} = \underline{\hspace{2cm}}$$

Q14. If $\sqrt{3} = 3^k$ Write down the value of k .

$$\underline{\hspace{2cm}}$$

Q15. If $\sqrt{m^3} = m^k$ Write down the value of k .

$$\underline{\hspace{2cm}}$$