

Workout

Question 1: Evaluate each of the following

(a) $25^{\frac{1}{2}}$ (b) $81^{\frac{1}{2}}$ (c) $4^{\frac{1}{2}}$ (d) $144^{\frac{1}{2}}$ (e) $8^{\frac{1}{3}}$ (f) $125^{\frac{1}{3}}$

(g) $100^{\frac{1}{2}}$ (h) $1000^{\frac{1}{3}}$ (i) $49^{\frac{1}{2}}$ (j) $225^{\frac{1}{2}}$ (k) $64^{\frac{1}{2}}$ (l) $27^{\frac{1}{3}}$

(m) $216^{\frac{1}{3}}$ (n) $64^{\frac{1}{3}}$ (o) $16^{\frac{1}{4}}$ (p) $1^{\frac{1}{4}}$ (q) $81^{\frac{1}{4}}$ (r) $625^{\frac{1}{4}}$

Question 2: Write each of the following in index form

(a) \sqrt{x} (b) \sqrt{y} (c) $\sqrt[3]{a}$ (d) $\sqrt[4]{y}$ (e) $\sqrt[6]{x}$ (f) $\sqrt[8]{c}$

Question 3: Evaluate each of the following

(a) $9^{\frac{3}{2}}$ (b) $4^{\frac{3}{2}}$ (c) $8^{\frac{2}{3}}$ (d) $27^{\frac{2}{3}}$ (e) $125^{\frac{2}{3}}$ (f) $49^{\frac{3}{2}}$

(g) $4^{\frac{5}{2}}$ (h) $64^{\frac{2}{3}}$ (i) $9^{\frac{5}{2}}$ (j) $100^{\frac{3}{2}}$ (k) $16^{\frac{3}{2}}$ (l) $1000^{\frac{2}{3}}$

(m) $100^{\frac{5}{2}}$ (n) $32^{\frac{2}{5}}$ (o) $4^{\frac{7}{2}}$ (p) $8^{\frac{5}{3}}$ (q) $16^{\frac{3}{4}}$ (r) $81^{\frac{3}{4}}$

(s) $32^{\frac{3}{5}}$ (t) $27^{\frac{5}{3}}$ (u) $64^{\frac{5}{6}}$ (v) $10000^{\frac{3}{4}}$

Question 4: Write each of the following in index form

(a) $\sqrt{a^3}$ (b) $\sqrt{w^5}$ (c) $\sqrt[3]{x^2}$ (d) $\sqrt[3]{w^4}$ (e) $\sqrt[5]{m^2}$ (f) $\sqrt[9]{k^4}$

Question 5: Write each of the following in the form 9^n

(a) 81 (b) 3 (c) 27

Question 6: Write each of the following in the form 64^n

(a) 8 (b) 4 (c) 16

Question 7: Simplify each of the following

(a) $(9x^2)^{\frac{1}{2}}$ (b) $(4x^6)^{\frac{1}{2}}$ (c) $(25x^8)^{\frac{1}{2}}$ (d) $(4x^3)^{\frac{1}{2}}$ (e) $(8x^3)^{\frac{1}{3}}$ (f) $(125x^6)^{\frac{1}{3}}$

Question 8: Evaluate each of the following

(a) $(64x^3)^{\frac{2}{3}}$ (b) $(9x^4)^{\frac{3}{2}}$ (c) $(27x^6)^{\frac{2}{3}}$ (d) $(4x^6)^{\frac{5}{2}}$ (e) $(16x^8)^{\frac{3}{4}}$ (f) $(32x^{20})^{\frac{3}{5}}$

Question 9: Write each of the following as fractions

(a) $8^{-\frac{2}{3}}$ (b) $25^{-\frac{3}{2}}$ (c) $64^{-\frac{2}{3}}$ (d) $4^{-\frac{5}{2}}$ (e) $81^{-\frac{3}{4}}$ (f) $10000^{-\frac{2}{5}}$

Apply

Question 1: Arrange the following in order, smallest first.

$$25^{\frac{1}{2}}, 8^{\frac{2}{3}}, 27^{\frac{1}{3}}$$

Question 2: Which is the odd one out?
Explain your answer.

$$64^{\frac{1}{2}}, 16^{\frac{3}{4}}, 9^{\frac{2}{3}}, 4^{\frac{3}{2}}$$

Question 3: Work out

(a) $64^{\frac{1}{3}} \times 2^3$ (b) $27^{\frac{2}{3}} \div 9^{\frac{3}{2}}$ (c) $(8^{\frac{2}{3}})^2$

Question 4: Gina has completed her homework.
Can you spot any mistakes?

Question 1

Work out $9^{\frac{1}{2}}$

4.5

Question 2

Work out $27^{\frac{2}{3}}$

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