

Surds - Exam Questions.

$$\begin{aligned} 1. \quad & \sqrt{50} \\ & = \sqrt{25} \sqrt{2} \\ & = 5\sqrt{2} \end{aligned}$$

$$\begin{aligned} 2. \quad & \sqrt{48} - 3\sqrt{3} \\ & = \sqrt{16}\sqrt{3} - 3\sqrt{3} \\ & = 4\sqrt{3} - 3\sqrt{3} \\ & = \sqrt{3} \end{aligned}$$

$$\begin{aligned} 3. \quad & \sqrt{32} - \sqrt{2} \\ & = \sqrt{16}\sqrt{2} - \sqrt{2} \\ & = 4\sqrt{2} - \sqrt{2} \\ & = 3\sqrt{2} \end{aligned}$$

$$\begin{aligned} 4. \quad & \sqrt{72} - \sqrt{2} + \sqrt{50} \\ & = \sqrt{36}\sqrt{2} - \sqrt{2} + \sqrt{25}\sqrt{2} \\ & = 6\sqrt{2} - \sqrt{2} + 5\sqrt{2} \\ & = 10\sqrt{2} \end{aligned}$$

$$\begin{aligned} 5. \quad & \frac{\sqrt{24}}{\sqrt{2}} \\ & = \frac{\sqrt{4}\sqrt{6}}{\sqrt{2}} \\ & = \frac{2\sqrt{6}}{\sqrt{2}} \\ & = \frac{2\sqrt{6} \times \sqrt{2}}{\sqrt{2} \times \sqrt{2}} \\ & = \frac{2\sqrt{12}}{2} \\ & = \sqrt{12} \\ & = \sqrt{4}\sqrt{3} \\ & = 2\sqrt{3} \end{aligned}$$

$$\begin{aligned} 11. \quad AC^2 &= \sqrt{50}^2 - \sqrt{32}^2 \\ &= 50 - 32 \\ &= 18 \\ AC &= \sqrt{18} \\ &= \sqrt{9}\sqrt{2} \\ &= 3\sqrt{2} \end{aligned}$$

Indices Exam Questions

$$\begin{aligned} 1 \text{ a) } & \frac{7a^3b^2}{a\sqrt{b}} \\ & = \frac{7a^3b^2}{ab^{\frac{1}{2}}} \\ & = 7a^2b^{\frac{3}{2}} \\ & = 7a^2\sqrt[2]{b^3} \end{aligned}$$

$$\begin{aligned} \text{b) } & a = -1, b = 4 \\ & = 7 \times (-1)^2 \times \sqrt[2]{4^3} \\ & = 7 \times 8 \\ & = 56. \end{aligned}$$

$$2. \quad y = 2x^{-\frac{2}{3}} \quad x = 8$$

$$\begin{aligned} y & = \frac{2}{\sqrt[3]{x^2}} \\ & = \frac{2}{\sqrt[3]{8^2}} \\ & = \frac{2}{4} \\ & = \frac{1}{2} \end{aligned}$$

$$3. \quad x^{\frac{2}{3}}(x^{\frac{1}{3}} + x^{-\frac{2}{3}})$$

$$\begin{aligned} & = x^{\frac{2}{3}} \times x^{\frac{1}{3}} + x^{\frac{2}{3}} \times x^{-\frac{2}{3}} \\ & = x^{\frac{4}{3}} + x^0 \\ & = x^{\frac{4}{3}} + 1 \\ & = \sqrt[3]{x^4} + 1 \end{aligned}$$

$$\begin{aligned} 4 \text{ a) } & \frac{m^5}{m^{-3}} \\ & = m^{5-(-3)} \\ & = m^8 \end{aligned}$$

$$\begin{aligned} \text{b) } & 125^{-\frac{2}{3}} \\ & = \frac{1}{\sqrt[3]{125^2}} \\ & = \frac{1}{5^2} \\ & = \frac{1}{25}. \end{aligned}$$

$$5. \frac{p^5 \times 8p}{2p^{-3}}$$

$$= \frac{8p^6}{2p^{-3}}$$

$$= 4p^9$$

$$6. 3a^4 \times a^{-6}$$

$$= 3a^{-24}$$

$$7. \frac{x^3 \times x^4}{x^9}$$

$$= \frac{x^7}{x^9}$$

$$= x^{-2}$$

$$= \frac{1}{x^2}$$

$$8. \frac{a^2 \times a^5}{a^{-3}}$$

$$= \frac{a^7}{a^{-3}}$$

$$= a^{10}$$

$$9. a) p^{\frac{1}{2}} (p^{\frac{5}{2}} - 2)$$

$$= p^{\frac{1}{2}} \times p^{\frac{5}{2}} - p^{\frac{1}{2}} \times 2$$

$$= p^3 - 2p^{\frac{1}{2}}$$

$$= p^3 - 2\sqrt{p}$$

$$b) 4^3 - 2\sqrt{4}$$

$$= 64 - 4$$

$$= 60$$