A2.A.11: Radicals as Fractional Exponents: Rewrite algebraic expressions in radical form as expressions with fractional exponents

1 The expression $\sqrt[4]{16a^6b^4}$ is equivalent to

1) $2a^2b$
2) $2a^{\frac{3}{2}}b$
3) $4a^2b$
4) $4a^{\frac{3}{2}}b$

2 The expression $\sqrt[4]{16x^2y^7}$ is equivalent to

1) $2x^{\frac{1}{2}}y^{\frac{7}{4}}$
2) $2x^8y^{28}$
3) $4x^{\frac{1}{2}}y^{\frac{7}{4}}$
4) $4x^8y^{28}$

3 The expression $\sqrt[4]{81x^2y^5}$ is equivalent to

1) $3x^{\frac{1}{2}}y^{\frac{5}{4}}$
2) $3x^{\frac{1}{2}}y^{\frac{4}{5}}$
3) $9xy^{\frac{5}{2}}$
4) $9xy^{\frac{2}{5}}$

4 The expression $\sqrt[3]{27a^{-6}b^3c^2}$ is equivalent to

1) $\frac{3bc^{\frac{2}{3}}}{a^2}$
2) $\frac{3b^9c^6}{a^{18}}$
3) $\frac{3b^6c^5}{a^3}$
4) $\frac{3b\sqrt[3]{3c^2}}{a^2}$

5 The volume of a soap bubble is represented by the equation $V = 0.094\sqrt{A^3}$, where A represents the surface area of the bubble. Which expression is also equivalent to V?

1) $0.094A^{\frac{3}{2}}$
2) $0.094A^{\frac{2}{3}}$
3) $0.094A^6$
4) $\left(0.094A^3\right)^{\frac{1}{2}}$

6 Which expression is equivalent to $\left(\sqrt{a^2b^{\frac{1}{2}}}\right)^{-1}$?

1) $a^{-2}b^{-\frac{1}{2}}$
2) $-ab^{\frac{1}{4}}$
3) $-ab^2$
4) $\frac{1}{ab^{\frac{1}{4}}}$

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Answer Section

1 ANS: 2 REF: 060419b
2 ANS: 1

$$\sqrt[4]{16x^2y^7} = 16^{\frac{1}{4}}x^{\frac{2}{4}}y^{\frac{7}{4}} = 2x^{\frac{1}{2}}y^{\frac{7}{4}}$$

REF: 061107a2
3 ANS: 1

$$\sqrt[4]{81x^2y^5} = 81^{\frac{1}{4}}x^{\frac{2}{4}}y^{\frac{5}{4}} = 3x^{\frac{1}{2}}y^{\frac{5}{4}}$$

REF: 081504a2
4 ANS: 1

$$\sqrt[3]{27a^{-6}b^3c^2} = 3a^{-2}bc^{\frac{2}{3}} = \frac{3bc^{\frac{2}{3}}}{a^2}$$

REF: 011606a2
5 ANS: 1 REF: 060708b
6 ANS: 4 REF: 060912b