

## Challenge Set – Radical Operations

- ① Given  $x > 0$ ,  $y > 0$ , which expression is equivalent to:

$$\frac{\sqrt[3]{27x^5}\sqrt[4]{32y^4}}{\sqrt{8x^3y^6}}$$

- A.  $\frac{3\sqrt[3]{x^2}\sqrt[4]{4}}{2x^3y^2}$
- B.  $\frac{3\sqrt{2}\sqrt[3]{x^2}\sqrt[4]{2}}{2x^3y^2}$
- C.  $\frac{3\sqrt[3]{x^2}\sqrt[4]{2}}{\sqrt{2x^3y^2}}$
- D.  $\frac{18\sqrt[3]{x^2}}{x^3y^2}$

- ② Variables  $a$ ,  $b$ , and  $c$  are real numbers where  $b = c^2$  and  $a = b^3$ . Write  $\sqrt[3]{ac} + \sqrt[3]{b^2}$  in terms of  $c$ .

- A.  $(2c^2)\sqrt[3]{c}$
- B.  $c^2\sqrt[3]{c} + c\sqrt[3]{c}$
- C.  $2c\sqrt[3]{c}$
- D.  $(c^6 + c)\sqrt[3]{c}$

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- ③ Rewrite this expression in simplest form. Assume variables represent positive numbers.

$$\sqrt{\frac{16w^2y^3}{75x^5}}$$

A.  $\frac{\sqrt{3xy}}{3x}$

B.  $\frac{4wy\sqrt{3xy}}{15x^3}$

C.  $\frac{4wy^2\sqrt{5xy}}{25x^3}$

D.  $\frac{4wy^2\sqrt{3xy}}{15x^3}$

- ④ Given:

$$b = \sqrt{a}$$

$$c = a^2$$

$$d = b^2c$$

Which expression is equivalent to  $\frac{d^2b}{ac}$  in terms of  $a$ ?

A.  $a^3\sqrt{a}$

B.  $a^7\sqrt{a}$

C.  $a^9$

D.  $a^{12}$