

**Explain what each target means.**

11.1 I can simplify radicals that have various indices.

11.2 I can add and subtract expressions containing radicals.

11.3 I can multiply, and divide expressions containing radicals.

11.4 I can use properties of roots and rational exponents to evaluate and simplify expressions.

11.5 I can rationalize denominators containing radicals and find the simplest common denominator.

11.6 I can solve equations containing  $n$ th roots or rational exponents.

11.7 I can solve radical equations and show how extraneous solutions may arise.

11.9 I can graph radical functions with and without technology.

1) Rationalize the denominator and simplify:  $\frac{4+\sqrt{6}}{4+\sqrt{2}}$

A.  $\frac{8-\sqrt{2}}{7}$

B.  $\frac{8-2\sqrt{2}-\sqrt{3}+2\sqrt{6}}{7}$

C.  $8+2\sqrt{2}-\sqrt{3}+2\sqrt{6}$

D.  $\frac{16-4\sqrt{2}-2\sqrt{3}+4\sqrt{6}}{14}$

2) Given  $x > 0$ ,  $y > 0$ , which expression is equivalent to:

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

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.  $\frac{3\sqrt[3]{x^2}\sqrt[4]{2}}{\sqrt{2}x^3y^2}$

D.  $\frac{18\sqrt[3]{x^2}}{x^3y^2}$

- 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) 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.  $(c^6 + c)\sqrt[3]{c}$

- 5) 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.  $a^{12}$

6) Completely simplify  $\frac{\sqrt[3]{162k^{162}}}{\sqrt[3]{32}}$ .

A.  $\frac{3\sqrt[3]{3}k^{54}}{2}$

B.  $\frac{3\sqrt[3]{12}k^{54}}{4}$

C.  $\frac{9k^{81}}{2}$

D.  $\frac{27k^{54}}{2}$