

NAME \_\_\_\_\_

DATE \_\_\_\_\_

**Module Test B Module 17**

**Fill in the blanks.**

1. The conjugate of  $\sqrt{2} - 4$  is  $\sqrt{2} + 4$  \_\_\_\_\_.
2. The conjugate of  $\sqrt{3} - \sqrt{5}$  is  $\sqrt{3} + \sqrt{5}$  \_\_\_\_\_.
3. The radical expression  $\sqrt[3]{2x^3}$  can be simplified as  $x\sqrt[3]{2}$  \_\_\_\_\_.
4. The radical expression  $\sqrt{5x^2}$  can be simplified as  $\sqrt{5}|x|$  \_\_\_\_\_.

**Determine whether each statement is true or false.**

- |   |   |
|---|---|
| <p>5. The radical expression <math>\sqrt{-9}</math> is the real number <math>-3</math>.<br/><b>False</b> _____</p> <p>7. The radical expression <math>\sqrt{9^2}</math> equals 9.<br/><b>True</b> _____</p> <p>9. The radical expression <math>\sqrt{7} + \sqrt{28}</math> is in simplest form.<br/><b>False</b> _____</p> <p>11. The fraction <math>\frac{\sqrt{18}}{\sqrt{6}}</math> simplifies to <math>\sqrt{3}</math>.<br/><b>True</b> _____</p> | <p>6. The radical expression <math>-\sqrt{49}</math> is a real number <math>-7</math>.<br/><b>True</b> _____</p> <p>8. The radical expression <math>\sqrt{(-5)^2}</math> equals <math>-5</math>.<br/><b>False</b> _____</p> <p>10. The product <math>\sqrt{x} \cdot \sqrt{x}</math> is <math>x</math>, for all <math>x</math>.<br/><b>False</b> _____</p> <p>12. The fraction <math>\frac{\sqrt{6}}{2}</math> simplifies to <math>\sqrt{3}</math>.<br/><b>False</b> _____</p> |
|---|---|

**Choose the simplest form of the given value.**

13.  $\sqrt{64}$   
 a. 32      **b. 8**      c. 4      d.  $6\sqrt{12}$
14.  $\sqrt[3]{-27}$   
**a. -3**      b. 3      c. not a real number      d.  $-3\sqrt[3]{9}$
15. 300  
 a.  $4\sqrt{75}$       b.  $5\sqrt{12}$       **c.  $10\sqrt{3}$**       d. 150

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16.  $\sqrt[3]{72}$

- a.  $2\sqrt[3]{9}$       b.  $2\sqrt[3]{3}$       c.  $2\sqrt{9}$       d. 6

17.  $\frac{3}{\sqrt{6}}$

- a.  $\frac{1}{\sqrt{2}}$       b.  $\sqrt{2}$       c.  $\sqrt{3}$       d.  $\frac{\sqrt{6}}{2}$

Simplify the following expressions.

18.  $7\sqrt{5} - 4\sqrt{5}$

$3\sqrt{5}$

19.  $4\sqrt[3]{7} + \sqrt[3]{7}$

$5\sqrt[3]{7}$

20.  $5\sqrt[3]{16} + 2\sqrt[3]{54}$

$16\sqrt[3]{2}$

21.  $\sqrt[3]{6k^2} \cdot \sqrt[3]{36k}$

$6k$

22.  $\sqrt{5}(\sqrt{3} + 2\sqrt{5})$

$\sqrt{15} + 10$

23.  $(\sqrt{2} - \sqrt{7})^2$

$9 - 2\sqrt{14}$

24.  $(\sqrt{3} + \sqrt{2})(\sqrt{3} - \sqrt{2})$

1

25.  $\frac{\sqrt{3}}{\sqrt{3} + \sqrt{2}}$

$3 - \sqrt{6}$

26.  $\frac{5}{\sqrt{18}}$

$\frac{5\sqrt{2}}{6}$

Answer the following questions.

27. Explain how a denominator with one term, containing a radical, is rationalized.

Both the numerator and the denominator must be multiplied by the same radical term, so the product of the denominators is a perfect square and thus a rational number.

28. Explain how a denominator with two terms, containing at least one radical, is rationalized.

Both the numerator and the denominator must be multiplied by the conjugate of the denominator, so the product of the denominators is a rational number.