Algebra 2  6.1.1 - 6.3.2  Test  Review

6.1.1: Simplify and rewrite expressions using properties of exponents.

1. (1 point)
What is the simplified form of the expression? \( \frac{x^{12}}{x^3} \)
   a. \( x^9 \)  b. \( x^{36} \)  c. \( \frac{1}{x^9} \)  d. \( x^{15} \)

2. (1 point)
What is the simplified form of the expression? \( \left( \frac{1}{10n} \right)^2 \)
   a. \( 10n^2 \)  b. \( \frac{1}{100n^2} \)  c. \( \frac{1}{10n} \)  d. \( \frac{1}{20n^2} \)

3. (1 point)
What is the simplified form of the expression? \( 3k^{-2}m^6 \)
   a. \( 3km^{-12} \)  b. \( \frac{3m^6}{k^2} \)  c. \( \frac{m^6}{3k^2} \)  d. \( 3k^2m^{-6} \)

4. (1 point)
What is the simplified form of the expression? \( (-6.7)^0 \)
   a. 1  b. 0  c. -6.7  d. -1

6.1.2: Determine the \( n \)th root.

5. (1 point)
\( \sqrt[3]{-3.24} \)
   a. -1.62  b. 1.8  c. -1.8  d. no real number root

Find the real-number root.

6. (1 point)
\( \sqrt[3]{\frac{-125}{343}} \)
   a. \( \frac{25}{49} \)  b. \( -\frac{125}{343} \)  c. \( -\frac{125}{1029} \)  d. \( -\frac{5}{7} \)
7. (1 point) 
Find all the real square roots of 0.0004.
   a. 0.00632 and –0.00632 
   b. 0.06325 and –0.06325 
   c. 0.0002 and –0.0002 
   d. 0.02 and –0.02 

What is a simpler form of the radical expression?
8. (1 point) 
\[ \sqrt[3]{27x^{15}y^{24}} \]
   a. \(3x^5y^8\) 
   b. \(9x^{15}y^{24}\) 
   c. \(3x^5y^8\) 
   d. \(9x^{15}y^{24}\) 

What is the simplest form of the expression?
9. (1 point) 
\[ \sqrt[3]{128a^{13}b^6} \]
   a. \(4a^4b^2\sqrt[3]{2a}\) 
   b. \(2a^4b^2\sqrt[3]{4a}\) 
   c. \(4a^4b^2\sqrt[3]{a}\) 
   d. none of these 

6.2 Multiply and Divide Radical Expressions.

Multiply and simplify if possible.
10. (1 point) 
\[ \sqrt{6} \cdot \sqrt{2} \]
   a. \(2\sqrt{3}\) 
   b. \(\sqrt{12}\) 
   c. \(3\sqrt{2}\) 
   d. not possible 

What is the simplest form of the product?
11. (1 point) 
\[ \sqrt[3]{7x^7} \cdot \sqrt[3]{9x^4} \]
   a. \(x^3 \cdot \sqrt[3]{63x^2}\) 
   b. \(\sqrt[3]{63x^{11}}\) 
   c. \(x^3 \cdot \sqrt[3]{63x^{11}}\) 
   d. none of these 

What is the simplest form of the quotient?
12. (1 point) 
\[ \frac{\sqrt[3]{162}}{\sqrt[3]{2}} \]
   a. \(3\sqrt{3}\) 
   b. \(\sqrt[3]{162}\) 
   c. \(3\sqrt{3}\) 
   d. \(3\sqrt{3}\)
13. (1 point)
\[
\frac{\sqrt{90x^{18}}}{\sqrt{2x}}
\]
- a. \(3x^8\sqrt{5x}\)
- b. \(\sqrt{18x^{17}}\)
- c. \(5x\sqrt{3x^8}\)
- d. none of these

**6.3.1: Add and subtract radical expressions**

14. (1 point)
What is the simplest form of \(4\sqrt{3x} + 5\sqrt{3x}\)?
- a. \(9\sqrt{3x}\)
- b. \(27\sqrt{3x}\)
- c. \(9\sqrt{6x}\)
- d. not possible to simplify

15. (2 points)
Find the sum \(\sqrt{98} + \sqrt{242} - \sqrt{2}\)
- a. \(77\sqrt{2}\)
- b. \(170\sqrt{2}\)
- c. \(18\sqrt{2}\)
- d. \(17\sqrt{2}\)

**6.3.2: Multiply and divide radical binomial expressions**

16. (2 points)
What is the product of \((8 - \sqrt{2})(-4 + \sqrt{2})\), written in simplest form?
- a. \(2 + 4\sqrt{2}\)
- b. \(-34 - 32\sqrt{2}\)
- c. \(-30 - 32\sqrt{2}\)
- d. \(-34 + 12\sqrt{2}\)

17. (3 points)
\[
\frac{\sqrt{3} - \sqrt{6}}{\sqrt{3} + \sqrt{6}}
\]
- a. \(\frac{-1 - 2\sqrt{18}}{3}\)
- b. \(\frac{-3 - 2\sqrt{18}}{9}\)
- c. \(-3 + 2\sqrt{2}\)
- d. \(9 - 2\sqrt{18}\)
Algebra 2  
6.1.1 - 6.3.2  Test Review

Answer Section

1. ANS: A  PTS: 1  REF: 7-5 Division Properties of Exponents
   OBJ: 7-5.1 To divide powers with the same base  DOK: DOK 1
2. ANS: B  PTS: 1  REF: 7-5 Division Properties of Exponents
   OBJ: 7-5.2 To raise a quotient to a power  DOK: DOK 1
3. ANS: B  PTS: 1  REF: 7-1 Zero and Negative Exponents
   OBJ: 7-1.1 To simplify expressions involving zero and negative exponents  DOK: DOK 1
4. ANS: A  PTS: 1  REF: 7-1 Zero and Negative Exponents
   OBJ: 7-1.1 To simplify expressions involving zero and negative exponents  DOK: DOK 1
5. ANS: D  PTS: 1  REF: 6-1 Roots and Radical Expressions
   OBJ: 6-1.1 To find nth roots  DOK: DOK 1
6. ANS: D  PTS: 1  REF: 6-1 Roots and Radical Expressions
   OBJ: 6-1.1 To find nth roots  DOK: DOK 1
7. ANS: D  PTS: 1  REF: 6-1 Roots and Radical Expressions
   OBJ: 6-1.1 To find nth roots  DOK: DOK 1
8. ANS: C  PTS: 1  REF: 6-1 Roots and Radical Expressions
   OBJ: 6-1.1 To find nth roots  DOK: DOK 1
9. ANS: A  PTS: 1  REF: 6-2 Multiplying and Dividing Radical Expressions
   OBJ: 6-2.1 To multiply and divide radical expressions  DOK: DOK 1
10. ANS: A  PTS: 1  REF: 6-2 Multiplying and Dividing Radical Expressions
    OBJ: 6-2.1 To multiply and divide radical expressions  DOK: DOK 1
11. ANS: A  PTS: 1  REF: 6-2 Multiplying and Dividing Radical Expressions
    OBJ: 6-2.1 To multiply and divide radical expressions  DOK: DOK 2
12. ANS: A  PTS: 1  REF: 6-2 Multiplying and Dividing Radical Expressions
    OBJ: 6-2.1 To multiply and divide radical expressions  DOK: DOK 1
13. ANS: A  PTS: 1  REF: 6-2 Multiplying and Dividing Radical Expressions
    OBJ: 6-2.1 To multiply and divide radical expressions  DOK: DOK 1
14. ANS: A  PTS: 1  REF: 6-3 Binomial Radical Expressions
    OBJ: 6-3.1 To add and subtract radical expressions  DOK: DOK 1
15. ANS: D  PTS: 2  REF: 6-3 Binomial Radical Expressions
    OBJ: 6-3.1 To add and subtract radical expressions  DOK: DOK 2
16. ANS: D  PTS: 2  REF: 6-3 Binomial Radical Expressions
    OBJ: 6-3.1 To add and subtract radical expressions  DOK: DOK 1
17. ANS: C  PTS: 3  REF: 6-3 Binomial Radical Expressions
    OBJ: 6-3.1 To add and subtract radical expressions  DOK: DOK 1