

Math 2201 Sample Test
Chapter 4: Radicals

Part A: Multiple Choice.

Name: _____

Write the letter of the correct response in the blank to the right. (10 marks)

1. What is $\sqrt{112}$ in simplified radical form? 1. ____
 A) $2\sqrt{28}$ B) $4\sqrt{28}$ C) $4\sqrt{7}$ D) $16\sqrt{7}$
2. What is $7\sqrt[3]{2}$ as an entire radical? 2. ____
 A) $\sqrt[3]{56}$ B) $\sqrt[3]{98}$ C) $\sqrt[3]{686}$ D) $\sqrt[3]{2744}$
3. What is the simplest radical form of $(\sqrt{32})(2\sqrt{6})$? 3. ____
 A) $2\sqrt{192}$ B) $8\sqrt{12}$ C) $16\sqrt{3}$ D) $128\sqrt{3}$
4. Simplify: $3\sqrt{7} + 4\sqrt{3} - 9\sqrt{3} + 12\sqrt{7}$ 4. ____
 A) $7\sqrt{7} + 3\sqrt{3}$ B) $10\sqrt{14}$ C) $15\sqrt{14} - 5\sqrt{6}$ D) $15\sqrt{7} - 5\sqrt{3}$
5. Expand and simplify: $4\sqrt{3}(2\sqrt{5} + \sqrt{3})$ 5. ____
 A) $6\sqrt{8} + 5\sqrt{6}$ B) $8\sqrt{15} + 12$ C) $8\sqrt{15} + 12$ D) $12\sqrt{2} + 5\sqrt{6}$
6. What is the simplified radical form of $\frac{5\sqrt{15}}{10\sqrt{3}}$? 6. ____
 A) $2\sqrt{5}$ B) $\frac{\sqrt{5}}{2}$ C) $\frac{\sqrt{45}}{6}$ D) $\frac{5\sqrt{45}}{30}$
7. Simplify: $\frac{\sqrt{30}}{\sqrt{27}}$ 7. ____
 A) $\frac{\sqrt{30}}{3\sqrt{3}}$ B) $\frac{\sqrt{90}}{9}$ C) $\frac{\sqrt{10}}{\sqrt{9}}$ D) $\frac{\sqrt{10}}{3}$
8. What are the restrictions of $\frac{3}{\sqrt{x+5}}$? 8. ____
 A) $x > -5$ B) $x \geq -5$ C) $x > 5$ D) $x \geq 5$
9. Simplify: $\frac{\sqrt{24x^5}}{\sqrt{8x}}$ 9. ____
 A) $4x^2$ B) $x^2\sqrt{3}$ C) $\sqrt{16x^4}$ D) $\sqrt{3x^4}$
10. What is the value of x in $\sqrt{x-11} = 4$? 10. ____
 A) 5 B) 7 C) 15 D) 27

Part B: Constructed Response. Answer all questions in the space provided and **SHOW ALL WORKINGS**. Be sure to **completely simplify** all answers. (23 marks)

1. Convert to mixed radical form and simplify. _____ / 4

$$9\sqrt{75} - 2\sqrt{300} + 6\sqrt{9} + 4\sqrt{12}$$

2. Simplify and state any restrictions on each variable. _____ / 4

$$9x^2y\sqrt{40x^5y^6}$$

3. Multiply and write in simplest radical form: _____ / 6

a. $\sqrt{3x}(\sqrt{4x^2} + 2\sqrt{x})$

b. $(5\sqrt{2} - 4)(2\sqrt{6} + 3\sqrt{2})$

4. Divide and rationalize the denominator.

___ / 3

$$\frac{3\sqrt{2} + \sqrt{3}}{2\sqrt{7}}$$

5. State any restrictions on y then solve, verify your solution.

___ / 4

$$\sqrt{y-1} + 7 = 13$$

6. Adam made an error while expressing $\sqrt{33048}$ as a mixed radical. Identify his error and correct the solution.

___ / 2

$$\begin{aligned}\sqrt{9720} &= \sqrt{2^3 \cdot 3^5 \cdot 5} \\ &= 2^2 \cdot 3^4 \sqrt{2 \cdot 3 \cdot 5} \\ &= 324\sqrt{30}\end{aligned}$$