

Name: _____

Date: _____

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- [10] A: Clearly state whether the given statement is true or false. If the statement is false, correct it so it is true.

| | |
|--|--|
| | $\sqrt[3]{3x}$ and $2\sqrt[4]{3x}$ are like radicals. |
| | $\frac{7}{\sqrt{x}}$ and $\frac{\sqrt{49x}}{x}$ are not equivalent expressions. |
| | $\sqrt[8]{12a}$ is defined only when $a \geq 0$. |
| | $\sqrt{55}$ is a real number that is also classified as irrational. |
| | $\sqrt[3]{-16}$ is not a real number. |
| | In the radical expression $\sqrt[3]{4yz^2}$ the radicand is $4yz^2$. |
| | $-1\frac{2}{3} = \frac{-1}{3}$ |
| | A cube with volume of 2197 cm^3 has a side length of 13cm. |
| | $\sqrt[6]{2b}$ is defined when b less than zero. |
| | $\sqrt{12b} = 4\sqrt{3b}$ |

- [9] B: Fill in the blanks ensuring each statement is true.

- A) The conjugate of $(x + 4y)$ is _____.
- B) No _____ number can be written as a fraction with an integer in the numerator and an integer in the denominator, where the denominator is not zero.
- C) Some radical equations have no _____ solutions.
- D) Only _____ radicals can be added and/or subtracted.
- E) It is not possible to get a real solution when taking a square root of a _____ number.
- F) Multiplying a fraction by $\frac{-\sqrt{5x}}{\sqrt{5x}}$ is essentially the same as multiplying it by _____.
- G) When checking validity of solutions to radical equations one has to carry out a _____ by substituting the proposed solution into the _____ equation and is verifying that _____.

C: Short answer.

[4] 1. Simplify:

| | |
|---------------------|--------------------|
| $\sqrt[3]{-128x^4}$ | $3ax^2 \sqrt{28x}$ |
| $\sqrt{363a^7}$ | $\sqrt[4]{81y^4}$ |

[4] 2. Express as entire radicals.

| | |
|---------------------|-------------------------|
| $2x \sqrt[3]{3x} =$ | $x \sqrt[3]{x} =$ |
| $4x \sqrt{12xz} =$ | $2a^3 c \sqrt[4]{ab} =$ |

- [4] 3. State the restrictions (if any) on the variable for each radical. Show your work to support your answer and reasoning.

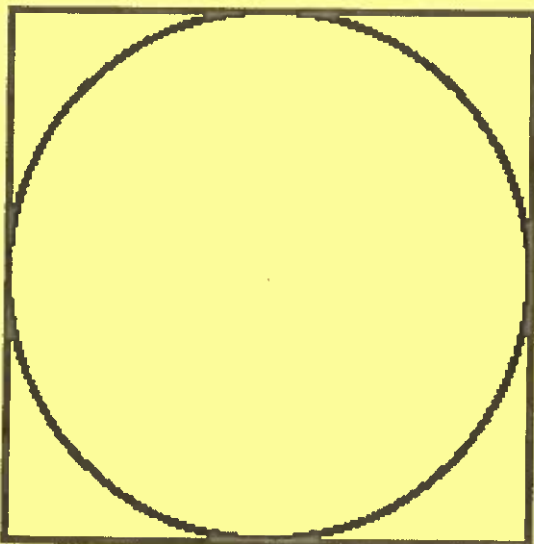
$$\sqrt{0.5y + 4}$$

$$\sqrt[4]{-2x + 11}$$

- [2] 4. What value of x makes the given radical undefined? Show your work to support your reasoning.

$$\sqrt{-1.2x + 15}$$

- [4] 5. Find the circumference of the circle inscribed in a square. The area of the square is 156.25cm^2 . Express the circumference in terms of π in millimeters.



[4] 6. Simplify by adding and/or subtracting.

$$-5\sqrt{x^3} - x\sqrt{36x} - \sqrt{400x} =$$

$$6y\sqrt{2y} - 5\sqrt{72y^3} + y\sqrt{18y} =$$

[4] 7. Multiply and simplify where possible:

$$(10 - \sqrt{3c})(\sqrt{3c} - 2) =$$

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

[4] 8. Divide and simplify where possible. Rationalize the denominator if needed.

$$\frac{-2\sqrt{5} - 4\sqrt{2}}{16\sqrt{2}}$$

$$\frac{-\sqrt{6} + 2\sqrt{11}}{\sqrt{7} + \sqrt{3}}$$

[6] 9. Solve each radical equation algebraically. Verify the solution.

$$12 = 7 - \sqrt{-x}$$

$$\sqrt{x+1} = \sqrt{4-2x}$$

$$\sqrt{x} = -\sqrt{x-3} + 10$$

[2] 10. Five less than three times the principal root of a number is twenty eight. Find the number.

