Section # _____ Name _____

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1. Evaluate the expression.

$$\left(-\frac{2}{3}\right)^{-3}$$

A. $\frac{27}{8}$ B. $-\frac{8}{27}$ C. $\frac{8}{27}$ D. $-\frac{27}{8}$

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2. Simplify the expression completely and write your answer using only positive exponents.

$$\frac{9a^{10}b^2}{12a^{-4}b^6}$$

A. $\frac{9a^6}{12b^4}$ B. $\frac{3a^{14}}{4b^3}$ C. $\frac{3a^6}{4b^4}$ D. $\frac{3a^{14}}{4b^4}$

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3. Evaluate the expression.

$$(-16)^{3/4}$$

A. -8

B. This expression is not a real number.

C. -2

D. 8

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4. Simplify the expression.

$$3\sqrt{28} + \sqrt{63}$$

A. $5\sqrt{7}$

B. $9\sqrt{7}$

C. The expression cannot be simplified.

D. $21\sqrt{7}$

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5. Which of the following statements is true?

A. $(18x^3)(\frac{1}{2}x^2) = 9x^6$

B. $\dfrac{x^7}{x^{-2}} = x^5$

C. $(-3x^4)^2 = 9x^8$

D. $-8x^{-3} = \dfrac{1}{8x^3}$

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6. Simplify the radical **completely**.

$$\sqrt[3]{1000a^3b^7c^{11}}$$

A. $1000a^3b^6c^9\sqrt[3]{bc^2}$

B. $10a\sqrt[3]{b^7c^{11}}$

C. $10a^3b^6c^9\sqrt[3]{bc^2}$

D. $10ab^2c^3\sqrt[3]{bc^2}$

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7. Solve the linear equation.

$$3(4x - 5) - (x - 17) = x - (1 - 10x)$$

A. All real numbers are solutions to this equation

B. $x = \dfrac{31}{20}$

C. This equation has no solution.

D. $x = -\dfrac{3}{20}$

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8. Solve the equation $A = 2\pi rh + 2\pi r^2$ for h, if $r \neq 0$.

A. $h = \dfrac{2\pi r}{A - 2\pi r^2}$

C. $h = \dfrac{A - 2\pi r^2}{2\pi r}$

B. $h = \dfrac{A}{2\pi r}$

D. $h = A - 2\pi r^2$

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9. Solve the quadratic equation.

$$2x^2 + 7x - 4 = 0$$

A. $x = -8, 1$

C. $x = -\dfrac{1}{2}, 4$

B. $x = -4, \dfrac{1}{2}$

D. $x = -1, 8$

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10. Solve the quadratic equation.

$$(x + 5)^2 = 8$$

A. $x = -1, -9$

C. $x = -1$

B. $x = -5 + 2\sqrt{2}$

D. $x = -5 + 2\sqrt{2}, -5 - 2\sqrt{2}$

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YOU MUST SHOW ALL WORK TO RECEIVE FULL CREDIT.

1. (7 points) Identify each statement as true or false. (Just write true or false beside each statement.)

   (a) $2x^2 - 6x + 1 = 0$ is a linear equation.

   (b) $\sqrt{10} = 5$

   (c) $-7x^{-1} = -\dfrac{7}{x}$

   (d) $(\sqrt[9]{7})^4 = 7^{4/9}$

   (e) $2 + 7\sqrt{2} = 9\sqrt{2}$

   (f) $(x+1)^2 = 2$ is a quadratic equation.

   (g) $\sqrt[5]{3^{10}} = 9$

2. (5 points) Perform the operations and simplify all radicals completely.

$$4\sqrt[3]{\frac{27}{8}} + (\sqrt{10} - 3)(\sqrt{20} + 6)$$

3. (4 points) Solve the linear equation.

$$\frac{3}{2}(x+4)+\frac{1}{6}(x-4)=\frac{1}{3}x$$

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4. (4 points) Solve the quadratic equation. (You may use any method.)

$$8x^2=5-6x$$

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5. (5 points) Solve the quadratic equation by completing the square. (**Note:** Credit will NOT be received for using any other method.)

$$2x^2 - 36x + 80 = 0$$
