

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Intermediate Algebra Chapter 9 and 10 Test

Please show all work. If there is not enough room use a separate piece of paper but make sure the answers are written on this paper.

1)

$$\begin{cases} 5x - 3y + 2z = 39 \\ 4x + 4y - 3z = 34 \\ 3x - 2y + 6z = 14 \end{cases}$$

2)

Monica has \$1, \$5, and \$10 bills in her wallet that are worth \$96. If she had one more \$1 bill, she would have just as many \$1 bills as \$5 and \$10 bills combined. She has 23 bills total. How many of each denomination does she have?

3)

Simplify. Remember to use absolute-value notation when necessary. If a root cannot be simplified, state this.

$$\sqrt{9x^2 - 6x + 1}$$

4)

Use the laws of exponents to simplify.

$$\left(2^{\frac{7}{12}}\right)^{\frac{2}{11}}$$

5)

Divide. Then simplify by taking roots, if possible. Assume all expressions under radicals represent positive numbers.

$$\frac{\sqrt{400xy}}{2\sqrt{2}}$$

6)

Simplify by factoring. Assume that all expressions under the radical represent nonnegative numbers.

$$\sqrt[5]{320x^7y^{10}}$$

7)

Use rational exponents to simplify.

$$\sqrt{(ab)^8}$$

8)

Write an equivalent expression using radical notation.

$$(a^4b^4)^{\frac{1}{7}}$$

9)

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Multiply.

$$(6 - 3i)(4 - 4i)$$

10)

Multiply. Assume all variables represent nonnegative real numbers.

$$(\sqrt{7x} + \sqrt{y})^2$$

11)

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Multiply as indicated. If possible, simplify any radical expressions that appear in the product.

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

12)

Multiply and simplify. Assume that no radicands were formed by raising negative numbers to even powers.

$$\sqrt{6x^3} \sqrt{18x^2}$$

13)

Subtract. Simplify by collecting like radical terms if possible, assuming that all expressions under radicals represent non-negative numbers.

$$\sqrt[3]{80x} - \sqrt[3]{10x^4}$$

14)

Rationalize the denominator. Assume that all expressions under radicals represent positive numbers.

$$\frac{\sqrt[3]{7a}}{\sqrt[3]{2c}}$$

15)

Rationalize the denominator. Assume that all expressions under radicals represent positive numbers.

$$\frac{\sqrt{c}}{\sqrt{c} + \sqrt{d}}$$

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16)

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Solve.

$$\sqrt{2x + 7} - 2 = x$$

17)

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Solve.

$$\sqrt{x+3} + \sqrt{3x+7} = 2$$

18)

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Solve.

$$\sqrt{6y+5} = \sqrt{5y+8}$$

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19)

Divide.

$$\frac{7i}{9-6i}$$

20)

Express in terms of  $i$ .

$$\sqrt{-64} + \sqrt{-45}$$