

**MTH 05 Sample Final Exam, Version 2**

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**Problem 1.** (4 pts) Solve for  $x$ .

$$z = 4x + 9y$$

- A.  $x = 4(z - 9y)$
  - B.  $x = \frac{z - 9y}{4}$
  - C.  $x = \frac{z}{4} - 9y$
  - D.  $x = \frac{z + 9y}{4}$
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**Problem 2.** (4 pts) Simplify completely.

$$\sqrt{7}(\sqrt{14} - 4\sqrt{7})$$

- A.  $7\sqrt{2} - 28$
  - B.  $2\sqrt{7} - 28$
  - C.  $49\sqrt{2}$
  - D.  $7\sqrt{2} - 4\sqrt{7}$
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**Problem 3.** (4 pts) Find all the solutions to the equation

$$3x^2 + 3x = 0$$

- A.  $x = 0$  or  $x = 1$
  - B. *Only*  $x = -1$
  - C.  $x = 0$  or  $x = -1$
  - D. *Only*  $x = 1$
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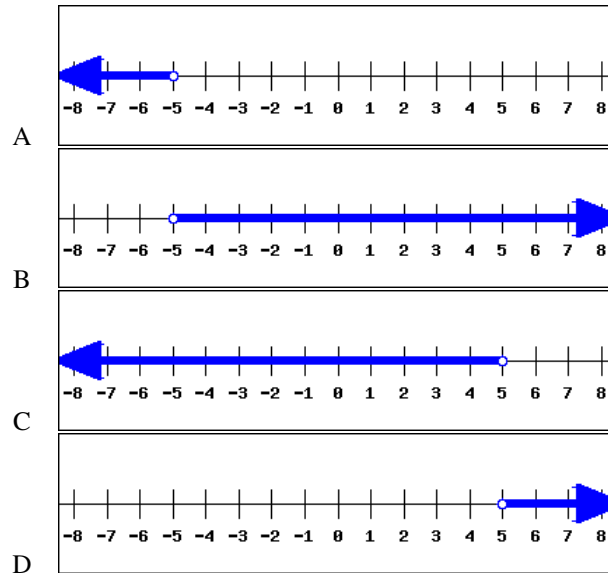
**Problem 4.** (4 pts) Simplify.

$$3\sqrt{2} + \sqrt{200}$$

- A.  $103\sqrt{2}$
- B.  $6 + 2\sqrt{10}$
- C.  $4\sqrt{2}$
- D.  $13\sqrt{2}$

**Problem 5.** (4 pts) Find the graph of the solution to the inequality.

$$3x + 1 > 8x - 24$$



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**Problem 6.** (4 pts)

Mark bought 5 vintage stamps for \$55.

How many stamps can Mark buy for \$ 44?

- A. 2
- B. 7
- C. 3
- D. 4

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**Problem 7.** (4 pts) Simplify Completely.

$$(16x^2 - 14x + 12) - (-9x^2 - 4x + 5)$$

- A.  $25x^2 - 10x + 17$
- B.  $7x^2 - 10x + 7$
- C.  $25x^2 + 18x + 7$
- D.  $25x^2 - 10x + 7$

**Problem 8.** (4 pts) Simplify.

$$\frac{48x^7(y^5)^5}{16x^{-8}y^{-36}}$$

- A.  $\frac{3}{xy^{11}}$
- B.  $\frac{3y^{46}}{x}$
- C.  $\frac{x^{15}}{3y^{11}}$
- D.  $3x^{15}y^{61}$

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**Problem 9.** (4 pts) Find the equation of the horizontal line passing through the point  $(-2, -1)$ .

- A.  $y = -1$
- B.  $x = -2$
- C.  $y = x - 1$
- D.  $y = \frac{1}{2}x - 1$

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**Problem 10.** (4 pts) Simplify completely.

$$\frac{8x^{12} - 20x^5 - 12x^3}{-4x^3}$$

- A.  $-2x^9 + 5x^2 + 3$
- B.  $8x^{12} - 20x^5$
- C.  $-2x^9 + 5x^2$
- D.  $-2x^9 - 5x^2 - 3$

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**Problem 11.** (4 pts) Evaluate  $h(-7)$  for  $h(x) = 4x^2 + 3x - 6$

- A. 223
- B. 211
- C. 169
- D. -223

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**Problem 12.** (4 pts) Find the equation of the line passing through the points  $(-3, -11)$  and  $(6, 25)$ . Write the equation in slope intercept form.

- A.  $y = 4x + 1$
- B.  $y = -4x - 23$
- C.  $y = -4x + 49$
- D.  $y = 4x - 11$

**Problem 13.** (4 pts) Find the slope and y-intercept for the graph of the equation.

$$-3x + 4y = 20$$

- A. Slope =  $\frac{4}{3}$  and y-intercept = (0, 20)
- B. Slope =  $-\frac{3}{4}$  and y-intercept = (0, 5)
- C. Slope =  $\frac{3}{4}$  and y-intercept = (0, 5)
- D. Slope =  $-\frac{4}{3}$  and y-intercept = (0, 20)

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**Problem 14.** (4 pts) Solve the equation for  $x$

$$34 + 2x = -2(-5 - 4x)$$

- A.  $x = 6$
- B.  $x = 5$
- C.  $x = 4$
- D.  $x = 3$

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**Problem 15.** (4 pts) Factor completely.

$$108x^3 - 3xy^2$$

- A.  $3x(6x - y)^2$
- B.  $3x(6x - y)(6x + y)$
- C.  $3x(36x^2 - y^2)$
- D.  $3(36x^3 - xy^2)$

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**Problem 16.** (4 pts) Simplify Completely.

$$(3x - 5)(x^2 - 2x - 3)$$

- A.  $3x^3 - 11x^2 - 9x + 15$
- B.  $3x^3 - 11x^2 + x + 15$
- C.  $3x^3 - x^2 + x + 15$
- D.  $3x^3 - x^2 - 9x + 15$

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**Problem 17.** (4 pts) What is the value of the y-coordinate of the solution to the system of equations.

$$\begin{aligned} -3x + y &= 5 \\ -4x + 4y &= 4 \end{aligned}$$

- A.  $y = -3$
- B.  $y = -1$
- C.  $y = 1$
- D.  $y = -5$

**Problem 18.** (4 pts) Find all the solutions to the equation.

$$-4y^2 = -196$$

- A. Only  $y = 7$
- B.  $y = 0$  or  $y = 49$
- C.  $y = -7$  or  $y = 7$
- D.  $y = 7$  or  $y = 49$

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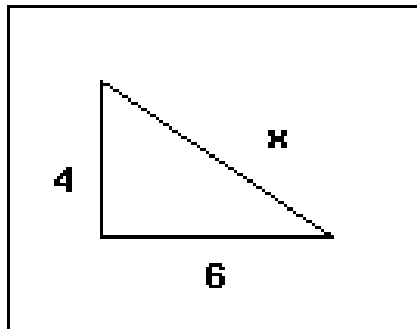
**Problem 19.** (4 pts) Which of the following is a factor of the polynomial?

$$3x^2 - 11x - 42$$

- A.  $x - 6$
- B.  $x + 6$
- C.  $3x - 6$
- D.  $3x - 7$

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**Problem 20.** (4 pts) What is the value of  $x$  in the right triangle?



- A.  $\sqrt{10}$
- B. 10
- C.  $2\sqrt{13}$
- D.  $13\sqrt{2}$

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**Problem 21.** (4 pts) If  $l$  represents a number, which equation is a correct translation of the sentence?

98 subtracted from 2 times a number is 24.

- A.  $98 - 2l = 24$
- B.  $2(98 - l) = 24$
- C.  $2l - 98 = 24$
- D.  $2(l - 98) = 24$

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**Problem 22.** (4 pts) Over four years the price of a car decreased from \$25000 to \$7500. What is the percent decrease in price?

- A. 3%
- B. 70%
- C. 30%
- D. 33%

**Problem 23.**(4 pts) Which of the following is a factor of the polynomial?

$$10ax + 12ay + 55bx + 66by$$

- A.  $2a - 11b$
- B.  $2x + 11y$
- C.  $5x - 6y$
- D.  $2a + 11b$

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**Problem 24.** (4 pts) Divide. Give the answer in scientific notation.

$$\frac{7 \times 10^{-8}}{8 \times 10^{-10}}$$

- A.  $8.75 \times 10^3$
- B.  $0.875 \times 10^2$
- C.  $8.75 \times 10^2$
- D.  $8.75 \times 10^1$

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**Problem 25.** (4 pts) Which of the following is the graph of the equation

$$-6x + 4y = -24?$$

