

**MTH 05 Sample Final Exam, Version 6**

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**Problem 1.** (4 pts) Multiply. Give the answer in scientific notation.

$$(6 \times 10^{-9})(5 \times 10^{-11})$$

- A.  $30 \times 10^{-20}$
- B.  $3.0 \times 10^{-20}$
- C.  $3.0 \times 10^{-19}$
- D.  $3.0 \times 10^{-21}$

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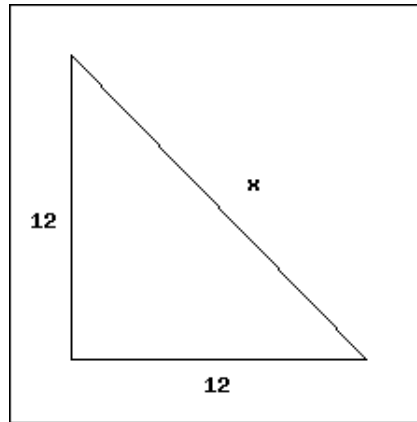
**Problem 2.** (4 pts) Which of the following is a factor of the polynomial?

$$3cw - cz + 3dw - dz$$

- A.  $c - d$
- B.  $w + z$
- C.  $3w + z$
- D.  $c + d$

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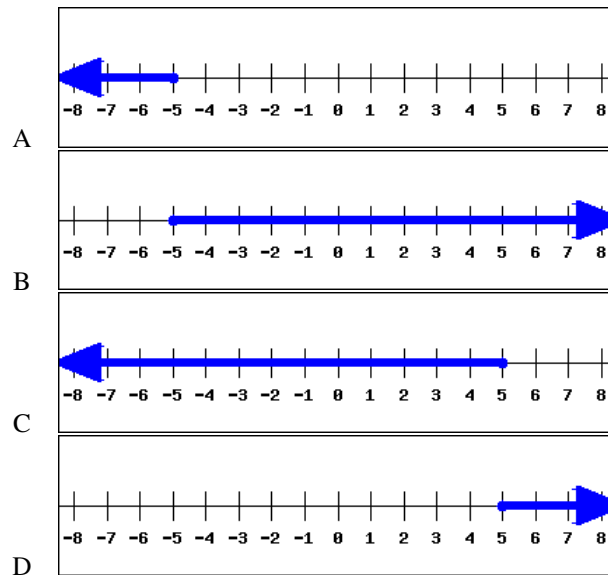
**Problem 3.** (4 pts) What is the value of  $x$  in the right triangle?



- A.  $12\sqrt{2}$
- B.  $6\sqrt{2}$
- C.  $2\sqrt{6}$
- D.  $2\sqrt{12}$

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

$$x - 9 \leq 9x + 31$$



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**Problem 5.** (4 pts) Find all the solutions to the equation

$$2x^2 + 10x = 0$$

- A.  $x = 0$  or  $x = 5$
- B. *Only*  $x = 5$
- C. *Only*  $x = -5$
- D.  $x = 0$  or  $x = -5$

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**Problem 6.** (4 pts) If  $k$  represents a number, which equation is a correct translation of the sentence?

23 subtracted from 6 times a number is 76.

- A.  $6(k - 23) = 76$
- B.  $6(23 - k) = 76$
- C.  $23 - 6k = 76$
- D.  $6k - 23 = 76$

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**Problem 7.** (4 pts) Find all the solutions to the equation.

$$5z^2 = 80$$

- A.  $z = 0$  or  $z = 16$
- B.  $z = -4$  or  $z = 4$
- C.  $z = 4$  or  $z = 16$
- D. *Only*  $z = 4$

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

$$\frac{\sqrt{2}\sqrt{72}}{\sqrt{6}}$$

- A.  $6\sqrt{2}$
- B.  $2\sqrt{12}$
- C.  $4\sqrt{6}$
- D.  $2\sqrt{6}$

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**Problem 9.** (4 pts) Which of the following is a factor of the polynomial?

$$3x^2 + 37x + 44$$

- A.  $x - 11$
- B.  $3x + 11$
- C.  $3x - 4$
- D.  $x + 11$

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**Problem 10.** (4 pts) Solve the equation for  $x$

$$45 - 3x = 2(5 - 4x)$$

- A.  $x = -6$
- B.  $x = -7$
- C.  $x = -8$
- D.  $x = -9$

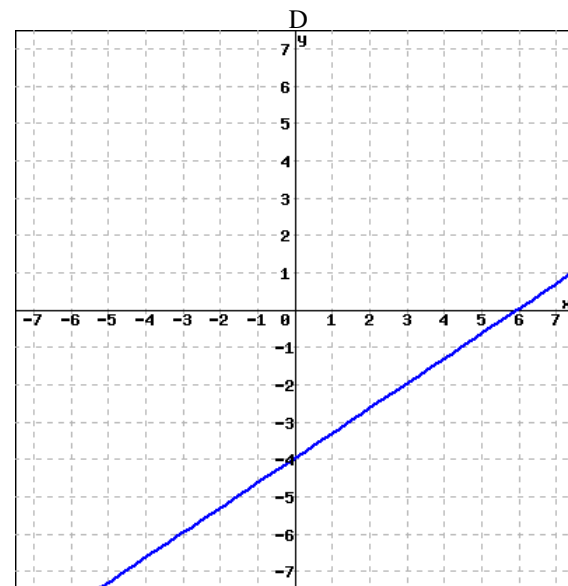
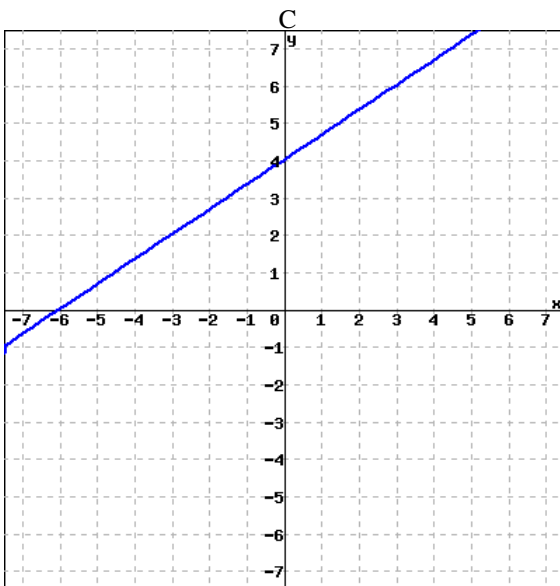
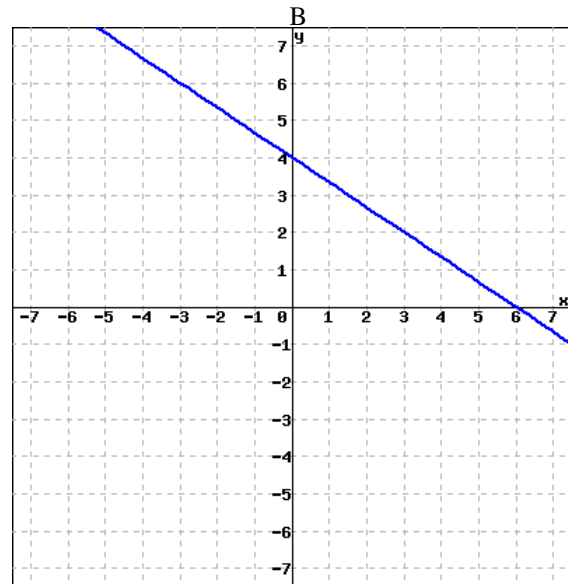
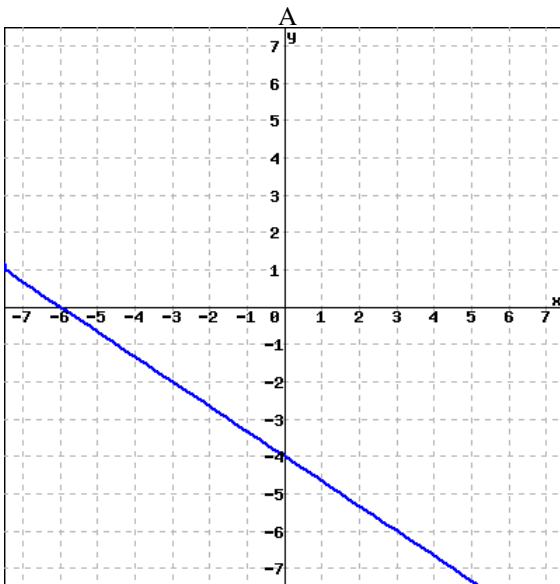
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**Problem 11.** (4 pts) Find the slope and y-intercept for the graph of the equation.

$$-3x - 2y = -4$$

- A. Slope =  $-\frac{2}{3}$  and y-intercept =  $(0, -4)$
- B. Slope =  $\frac{2}{3}$  and y-intercept =  $(0, -4)$
- C. Slope =  $\frac{3}{2}$  and y-intercept =  $(0, 2)$
- D. Slope =  $-\frac{3}{2}$  and y-intercept =  $(0, 2)$

**Problem 12.** (4 pts) Which of the following is the graph of the equation  $4x - 6y = 24$ ?



**Problem 13.** (4 pts) Simplify completely.

$$\frac{-35x^{17} + 14x^7 - 21x^3}{-7x^3}$$

- A.  $-35x^{17} + 14x^7$
- B.  $5x^{14} + 2x^4 - 3$
- C.  $5x^{14} - 2x^4 + 3$
- D.  $5x^{14} - 2x^4$

**Problem 14.** (4 pts) Find the equation of the vertical line passing through the point  $(5, 8)$ .

- A.  $y = \frac{8}{5}x + 8$
- B.  $x = 5$
- C.  $y = x + 8$
- D.  $y = 8$

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**Problem 15.** (4 pts) Simplify Completely.  $(3x^2 - 19x + 9) - (-6x^2 - 4x + 2)$

- A.  $9x^2 - 15x + 11$
- B.  $-3x^2 - 15x + 7$
- C.  $9x^2 - 15x + 7$
- D.  $9x^2 + 23x + 7$

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**Problem 16.** (4 pts) Find the equation of the line passing through the points  $(-2, 0)$  and  $(6, -24)$ . Write the equation in slope intercept form.

- A.  $y = -3x + 0$
- B.  $y = 3x - 42$
- C.  $y = 3x + 6$
- D.  $y = -3x - 6$

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**Problem 17.** (4 pts) Factor completely.

$$4x^2y - 16y^3$$

- A.  $4y(x^2 - 4y^2)$
- B.  $4(x^2y - 4y^3)$
- C.  $4y(x - 2y)(x + 2y)$
- D.  $4y(x - 2y)^2$

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**Problem 18.** (4 pts) Simplify.

$$\frac{40x^2(y^7)^4}{5x^{-8}y^{-26}}$$

- A.  $\frac{8y^{37}}{x^6}$
- B.  $\frac{1}{8}x^{10}y^2$
- C.  $\frac{8y^2}{x^6}$
- D.  $8x^{10}y^{54}$

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**Problem 19.** (4 pts) Simplify.

$$7\sqrt{54} - 3\sqrt{24}$$

- A.  $-15\sqrt{6}$
- B.  $42\sqrt{3} - 18\sqrt{2}$
- C.  $15\sqrt{6}$
- D.  $51\sqrt{6}$

**Problem 20.** (4 pts) Solve for  $x$ .

$$z = 3x + 4y$$

- A.  $x = \frac{z}{3} - 4y$
- B.  $x = 3(z - 4y)$
- C.  $x = \frac{z - 4y}{3}$
- D.  $x = \frac{z + 4y}{3}$

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**Problem 21.** (4 pts) Over four years the price of a car decreased from \$20000 to \$13000. What is the percent decrease in price?

- A. 2%
- B. 35%
- C. 65%
- D. 15%

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**Problem 22.** (4 pts) Simplify Completely.

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

- A.  $3x^3 - 11x^2 - 6x + 10$
- B.  $3x^3 - x^2 - 6x + 10$
- C.  $3x^3 - 11x^2 + 4x + 10$
- D.  $3x^3 - x^2 + 4x + 10$

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**Problem 23.** (4 pts) What is the value of the  $x$ -coordinate of the solution to the system of equations.

$$\begin{aligned} -4x - y &= -12 \\ 4x + 5y &= 28 \end{aligned}$$

- A.  $x = 0$
- B.  $x = 2$
- C.  $x = 4$
- D.  $x = 6$

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**Problem 24.** (4 pts) Evaluate  $f(-4)$  for  $f(x) = 4x^2 - 4x - 8$

- A. -56
- B. 40
- C. 56
- D. 72

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**Problem 25.** (4 pts)

Maria bought 8 pens for \$48.

How many pens can she buy for \$ 60?

- A. 10
- B. 13
- C. 14
- D. 9