MTH 05 Sample Final Exam, Version 3

1. Simplify.
$$8\sqrt{10} + 3\sqrt{360}$$

- **A.** $116\sqrt{10}$
- **B.** $26\sqrt{10}$
- **C.** $11\sqrt{10}$
- **D.** $80 + 30\sqrt{6}$

2. Simplify completely.
$$\sqrt{3}(\sqrt{21} + 5\sqrt{3})$$

- **A.** $3\sqrt{7} + 5\sqrt{3}$
- **B.** $3\sqrt{7} + 15$
- **C.** $7\sqrt{3} + 15$
- **D.** $9\sqrt{7}$

3. Simplify completely.
$$\frac{\sqrt{2}\sqrt{70}}{\sqrt{5}}$$

- **A.** $2\sqrt{14}$
- **B.** $4\sqrt{7}$
- **C.** $2\sqrt{7}$
- **D.** $7\sqrt{2}$

4. Simplify.
$$\frac{15x^8(y^7)^4}{5x^3y^{-17}}$$

- **A.** $3x^{11}y^{11}$

- **B.** $3x^5y^{45}$

- **C.** $\frac{1}{3}x^5y^{11}$

- **D.** $3x^{11}y^{28}$

5. Simplify.
$$3x^{-9}\,x^{-6}\,y^{15}$$

- **A.** $\dfrac{3y^{15}}{x^{15}}$
- **B.** $\dfrac{-3y^{15}}{x^{15}}$
- **C.** $3x^{15}y^{15}$
- **D.** 3

6. Simplify Completely.

$$(11x^2 - 20x + 9) - (-5x^2 - 6x + 6)$$

- **A.** $16x^2 + 26x + 3$
- **B.** $16x^2 - 14x + 3$
- **C.** $16x^2 - 14x + 15$
- **D.** $6x^2 - 14x + 3$

7. Multiply.

$$(4x - 5)(x^2 + 3x + 2)$$

- **A.** $4x^3 + 7x^2 + 8x - 10$
- **B.** $4x^3 + 17x^2 - 7x - 10$
- **C.** $4x^3 + 7x^2 - 7x - 10$
- **D.** $4x^3 + 17x^2 + 8x - 10$

8. Simplify completely.

$$\frac{8x^{20} - 10x^9 - 4x^5}{-2x^5}$$

- **A.** $-4x^{15} - 5x^4 - 2$
- **B.** $-4x^{15} + 5x^4 + 2$
- **C.** $8x^{20} - 10x^9$
- **D.** $-4x^{15} + 5x^4$

9. Factor completely.

$$45x^2y - 20y^3$$

- **A.** $5y(3x - 2y)(3x + 2y)$
- **B.** $5y(9x^2 - 4y^2)$
- **C.** $5y(3x - 2y)^2$
- **D.** $5(9x^2y - 4y^3)$

10. Which of the following is a factor of the polynomial?

$$2x^2 + 11x + 9$$

- **A.** $2x - 9$
- **B.** $x + 9$
- **C.** $2x + 9$
- **D.** $x - 1$

11. Which of the following is a factor of the polynomial?

$$6cw + 5cz - 30dw - 25dz$$

- **A.** $c + 5d$
- **B.** $6w + 5z$
- **C.** $w - 5z$
- **D.** $6w - 5z$

12. If m represents a number, which equation is a correct translation of the sentence?

76 **is** 40 **subtracted from** 3 **times a number.**

- **A.** $76 = 40 - 3m$
- **B.** $76 = 3(40 - m)$
- **C.** $76 = 3(m - 40)$
- **D.** $76 = 3m - 40$

13. Solve for x.

$$\frac{x+9}{10} = \frac{x+3}{6} + \frac{3}{10}$$

- **A.** $x = \frac{1}{2}$
- **B.** $x = \frac{5}{2}$
- **C.** $x = \frac{3}{2}$
- **D.** $x = -\frac{5}{2}$

14. Solve for x.

$$3x - 53 = -2(3x + 4)$$

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

15. What is the value of the y-coordinate of the solution to the system of equations.

$$\begin{aligned} x + 4y &= -16 \\ -3x - y &= -7 \end{aligned}$$

- **A.** $y = -7$
- **B.** $y = -3$
- **C.** $y = -5$
- **D.** $y = -1$

16. Solve for y.
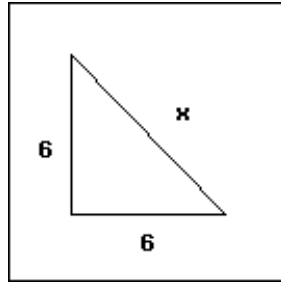
$$z = 9x + 3y$$

- **A.** $y = \frac{z}{3} - 9x$
- **B.** $y = \frac{z - 9x}{3}$
- **C.** $y = \frac{z + 9x}{3}$
- **D.** $y = 3(z - 9x)$

17. Find all solutions to the equation.

$$x^2 + 15 = 8x$$

- **A.** *Only* $x = 6$
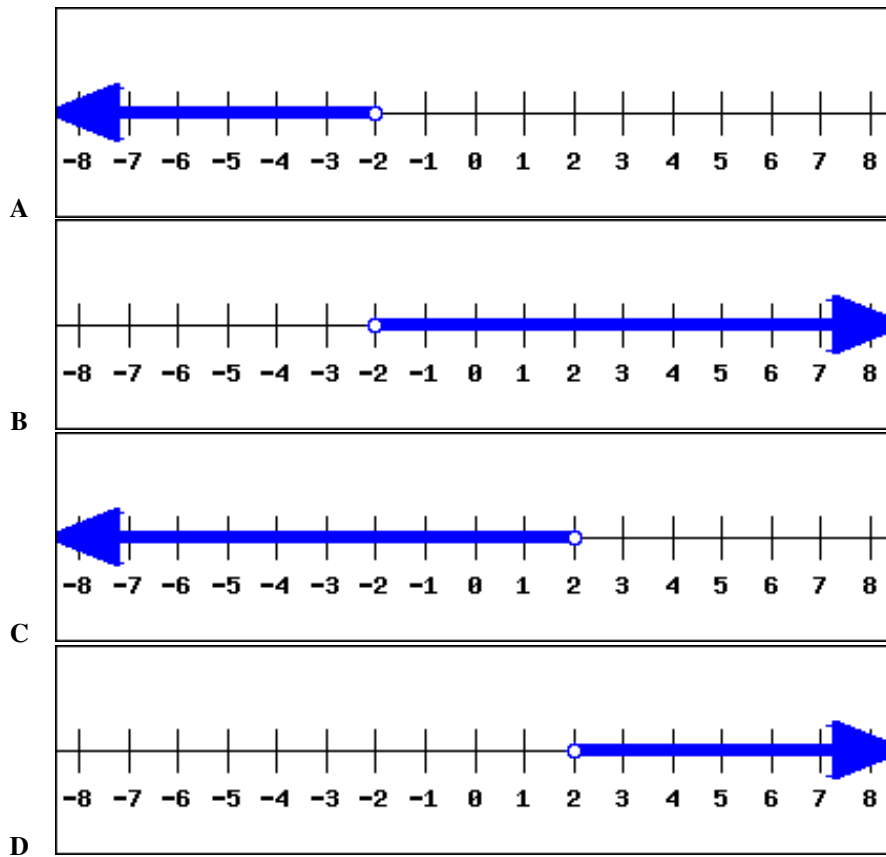- **B.** $x = 6$ *or* $x = 1$
- **C.** $x = 5$ *or* $x = 3$
- **D.** *Only* $x = 3$

18. What is the value of x in the right triangle?

- **A.** $3\sqrt{2}$
- **B.** $2\sqrt{6}$
- **C.** $6\sqrt{2}$
- **D.** $2\sqrt{3}$

---

19. Find the graph of the solution to the inequality.
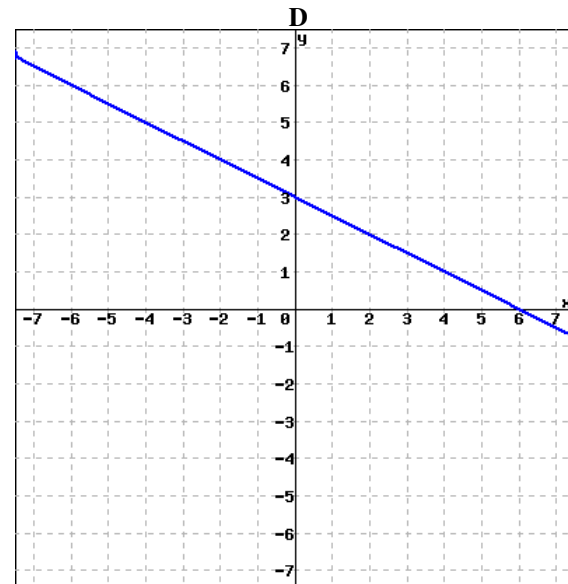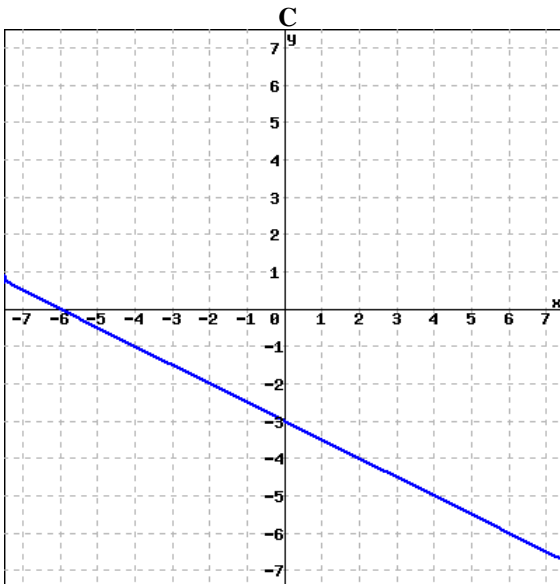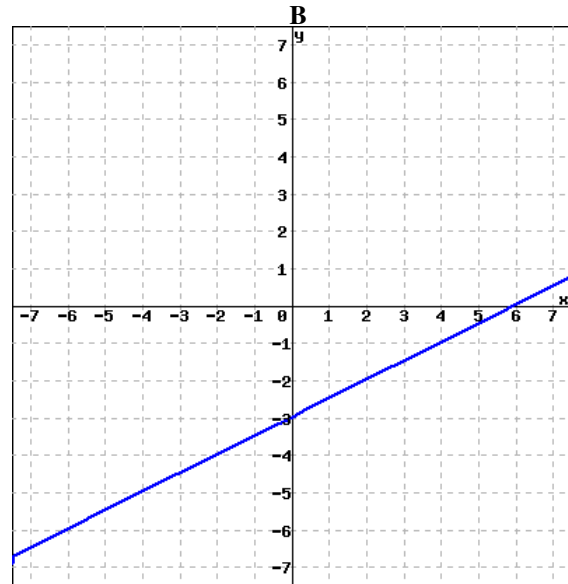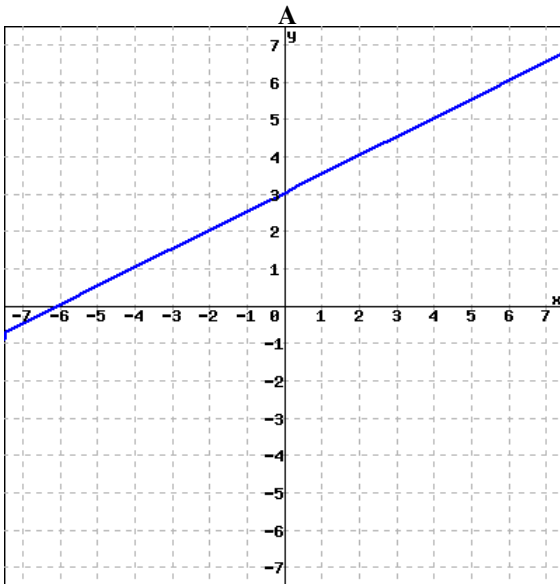
$$-5x+5 > -x+13$$

A

B

C

D

20. Given $a = -5$ and $b = 4$, evaluate the expression given below.

$$ba + a^2 + b^2 a$$

- **A.** 125
- **B.** -35
- **C.** 75
- **D.** -75

21. Which of the following is the graph of the equation $3x - 6y = 18$?

A

B

C

D

22. Find the equation of the line passing through the points $(-2,-4)$ and $(7,23)$. Write the equation in slope-intercept form.

- **A.** $y = -3x - 10$
- **B.** $y = 3x + 2$
- **C.** $y = 3x - 4$
- **D.** $y = -3x + 44$

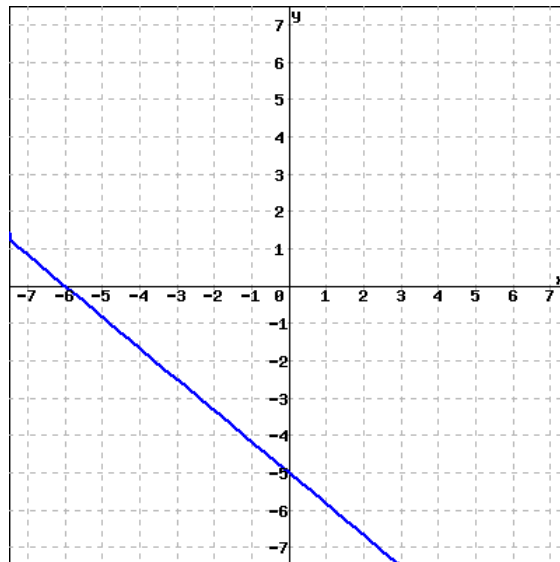**23. Find the equation of the vertical line passing through the point $(10, -9)$.**

- **A.** $y = -9$
- **B.** $y = -\frac{9}{10}x - 9$
- **C.** $y = x - 9$
- **D.** $x = 10$

24. Find the slope and y-intercept for the graph of the equation.

$$7x - 9y = -27$$

- **A.** Slope $= -\dfrac{7}{9}$ and y-intercept $= (0,3)$

- **B.** Slope $= \dfrac{7}{9}$ and y-intercept $= (0,3)$

- **C.** Slope $= \dfrac{9}{7}$ and y-intercept $= (0,-27)$

- **D.** Slope $= -\dfrac{9}{7}$ and y-intercept $= (0,-27)$

25. What is the slope of the line graphed below?

- **A.** $-\frac{6}{5}$
- **B.** $\frac{6}{5}$
- **C.** $\frac{5}{6}$
- **D.** $-\frac{5}{6}$

Answers.

1.B
2.B
3.C
4.B
5.A
6.B
7.C
8.B
9.A
10.C
11.B
12.D
13.C
14.D
15.C
16.B
17.C
18.C
19.A
20.D
21.B
22.B
23.D
24.B
25.D