MTH 05 Sample Final Exam, Version 5

1. Simplify.
$$5\sqrt{45} - 2\sqrt{180}$$

- **A.** $-27\sqrt{5}$
- **B.** $25\sqrt{3} - 10\sqrt{6}$
- **C.** $3\sqrt{5}$
- **D.** $-3\sqrt{5}$

2. Simplify completely.
$$\sqrt{2}(\sqrt{14} + 5\sqrt{2})$$

- **A.** $7\sqrt{2} + 10$
- **B.** $2\sqrt{7} + 5\sqrt{2}$
- **C.** $2\sqrt{7} + 10$
- **D.** $4\sqrt{7}$

3. Simplify completely.
$$\frac{\sqrt{6}\sqrt{90}}{\sqrt{5}}$$

- **A.** $6\sqrt{18}$
- **B.** $3\sqrt{6}$
- **C.** $36\sqrt{3}$
- **D.** $6\sqrt{3}$

4. Simplify.
$$\frac{45x^2(y^2)^3}{9x^{-6}y^{-1}}$$

- **A.** $5x^8y^7$

- **B.** $\dfrac{5y^5}{x^4}$

- **C.** $\dfrac{5y^6}{x^4}$

- **D.** $\dfrac{1}{5}x^8y^5$

5. Simplify.
$$(3\,x^4\,y\,z^{-5}\,)^4$$

- **A.** $\dfrac{12x^{16}y^4}{z^{20}}$

- **B.** $\dfrac{12x^4y}{z^5}$

- **C.** $\dfrac{81x^8y^5}{z}$

- **D.** $\dfrac{81x^{16}y^4}{z^{20}}$

6. Simplify Completely.

$$(8x^2 - 16x + 14) - (-10x^2 - 4x + 4)$$

- **A.** $18x^2 + 20x + 10$
- **B.** $-2x^2 - 12x + 10$
- **C.** $18x^2 - 12x + 10$
- **D.** $18x^2 - 12x + 18$

7. Multiply.

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

- **A.** $5x^3 + 7x^2 - 21x + 9$
- **B.** $5x^3 + 13x^2 - 21x + 9$
- **C.** $5x^3 + 7x^2 - 15x + 9$
- **D.** $5x^3 + 13x^2 - 15x + 9$

8. Simplify completely.

$$\frac{14x^{12} - 28x^7 - 35x^3}{-7x^3}$$

- **A.** $-2x^9 + 4x^4$
- **B.** $-2x^9 - 4x^4 - 5$
- **C.** $-2x^9 + 4x^4 + 5$
- **D.** $14x^{12} - 28x^7$

9. Factor completely.

$$6x^3 - 96xy^2$$

- **A.** $6x(x^2 - 16y^2)$
- **B.** $6x(x - 4y)^2$
- **C.** $6(x^3 - 16xy^2)$
- **D.** $6x(x - 4y)(x + 4y)$

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

$$2x^2 + 11x - 6$$

- **A.** $2x - 1$
- **B.** $x - 6$
- **C.** $x - 1$
- **D.** $2x + 1$

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

$$5cw + 3cz + 20dw + 12dz$$

- **A.** $5w - 3z$
- **B.** $w + 4z$
- **C.** $c - 4d$
- **D.** $5w + 3z$

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

64 **is** 73 **subtracted from** 6 **times a number.**

- **A.** $64 = 6(73 - y)$
- **B.** $64 = 6y - 73$
- **C.** $64 = 73 - 6y$
- **D.** $64 = 6(y - 73)$

13. Solve for x.

$$\frac{x-4}{12} - \frac{8}{45} = \frac{x-8}{15}$$

- **A.** $x = -\frac{2}{3}$
- **B.** $x = -\frac{4}{3}$
- **C.** $x = \frac{1}{3}$
- **D.** $x = -\frac{5}{3}$

14. Solve for x.

$$2(-3 - 3x) = -2x - 38$$

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

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

$$-4x + 4y = -8$$
$$x + 2y = 2$$

- **A.** $x = 3$
- **B.** $x = 2$
- **C.** $x = 4$
- **D.** $x = 1$

16. Solve for y.

$$z = 7x + 6y$$

- **A.** $y = \frac{z}{6} - 7x$
- **B.** $y = 6(z - 7x)$
- **C.** $y = \frac{z + 7x}{6}$
- **D.** $y = \frac{z - 7x}{6}$

17. Find all solutions to the equation.

$$-3x^2 - 6x = 0$$

- **A.** *Only* $x = 2$
- **B.** $x = 0$ *or* $x = -2$
- **C.** $x = 0$ *or* $x = 2$
- **D.** *Only* $x = -2$

18. What is the value of x in the right triangle?
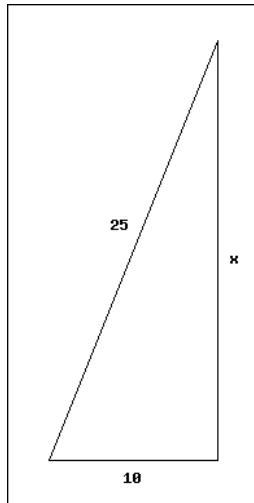
- **A.** $5\sqrt{21}$
- **B.** $21\sqrt{5}$
- **C.** 15
- **D.** $\sqrt{15}$

---

19. Find the graph of the solution to the inequality.

$$-3x+7 < 7x+17$$

A

B

C

D
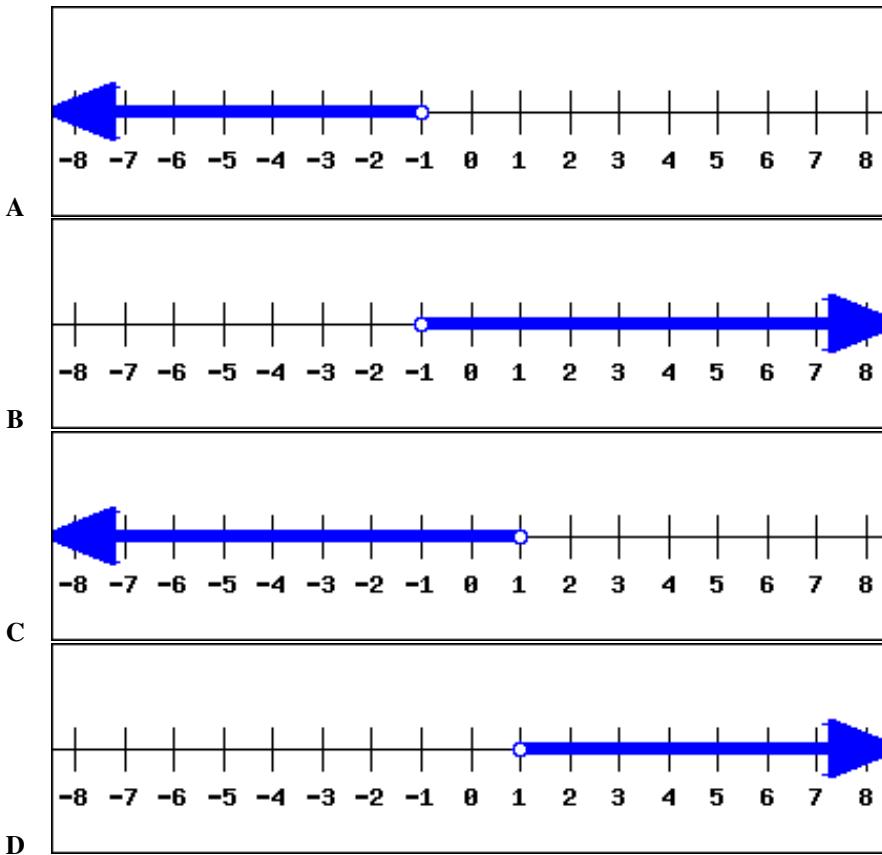
20. Given $a = 5$ and $b = -2$, evaluate the expression given below.

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

- **A.** 35
- **B.** 55
- **C.** -15
- **D.** -55

---

21. Which of the following is the graph of the equation $2x - 5y = 10$?

A

B

C

D
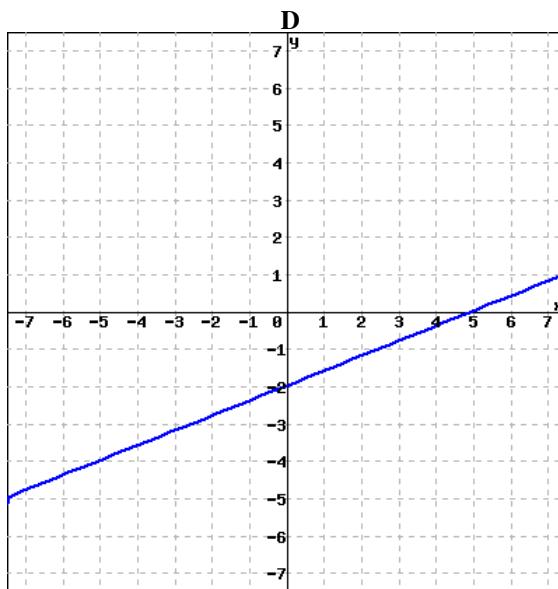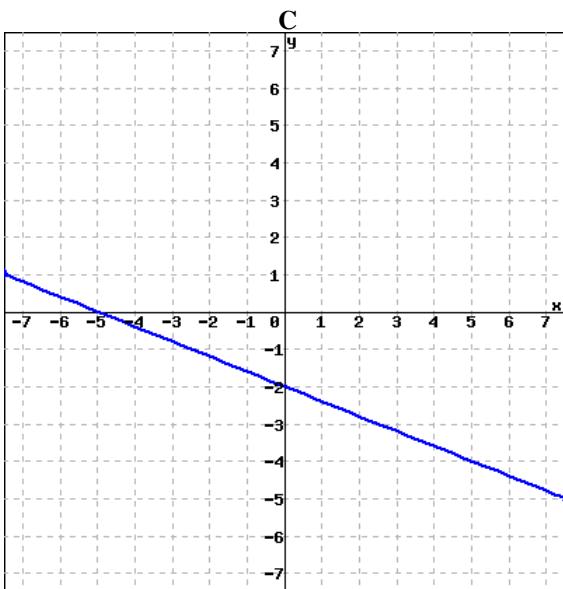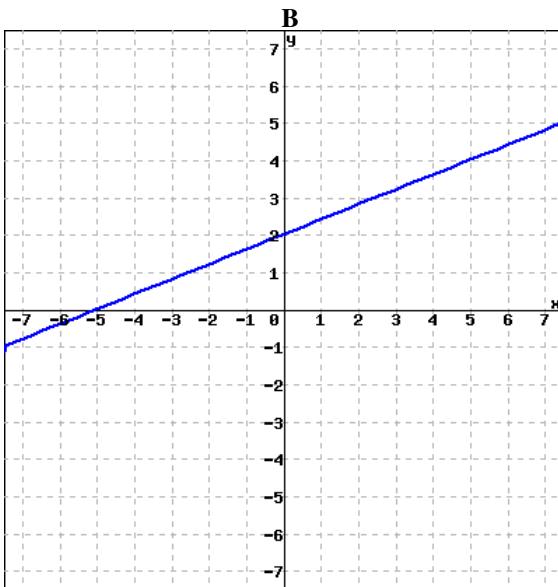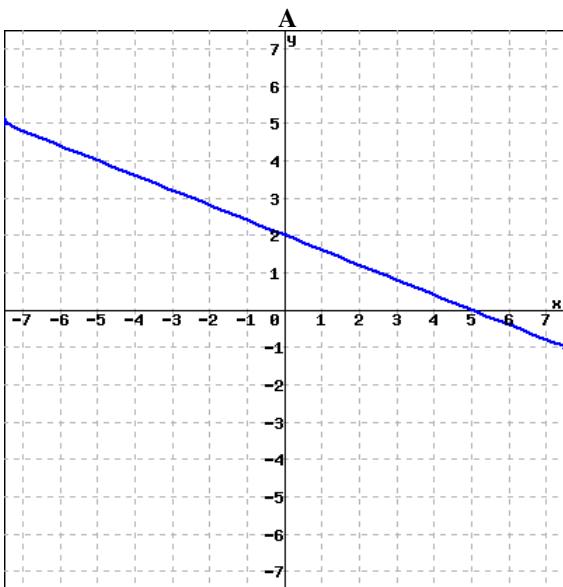
22. Find the equation of the line passing through the points $(-3, 13)$ and $(4, -8)$. Write the equation in slope-intercept form.

- **A.** $y = 3x + 22$
- **B.** $y = -3x + 4$
- **C.** $y = -3x + 13$
- **D.** $y = 3x - 20$

**23. Find the equation of the horizontal line passing through the point $(5, -1)$.**

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

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

$$-6x + 11y = 66$$

- **A. Slope** $= \dfrac{11}{6}$ **and y-intercept** $= (0, 66)$

- **B. Slope** $= \dfrac{6}{11}$ **and y-intercept** $= (0, 6)$

- **C. Slope** $= -\dfrac{11}{6}$ **and y-intercept** $= (0, 66)$

- **D. Slope** $= -\dfrac{6}{11}$ **and y-intercept** $= (0, 6)$

25. What is the slope of the line graphed below?
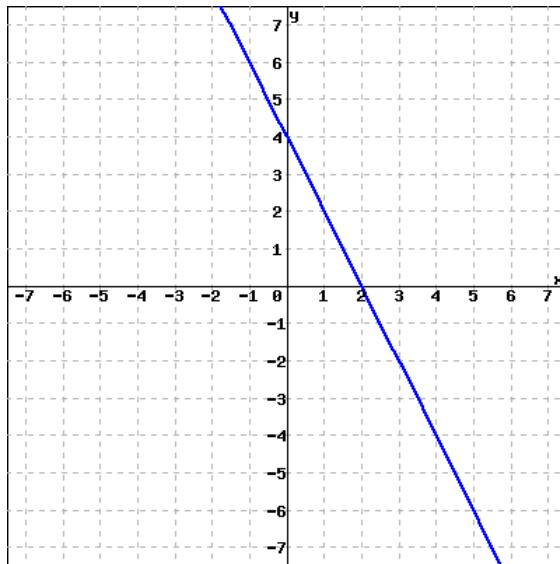
- **A.** $\frac{1}{2}$
- **B.** -2
- **C.** $-\frac{1}{2}$
- **D.** 2

Answers.

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