BRONX COMMUNITY COLLEGE
of the City University of New York

DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE

MATH 05 — Exam 4
Nikos Apostolakis — November 15, 2016

Name: _____

Directions: Write your answers in the provided space. To get full credit you *must* show all your work. Simplify your answers whenever possible. Be certain to indicate your final answer clearly. **Each problem is worth** 4 **points**

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

$$a^2 - 2ab + ab^2$$

A. 25 B. -25 C. -20 D. 45

2. Solve for x:

$$\frac{x+7}{2} = \frac{x+12}{3}$$

A. $x = 1$ B. $x = 5$ C. $x = 6$ D. $x = 3$

3. Simplify: $y^{-8}y^3$

A. $-\frac{1}{y^5}$ B. $\frac{1}{y^5}$ C. $-y^5$ D. y^5

4. Simplify $\frac{-25x^6y^8}{5x^3y^2}$

A. $-5x^3y^6$ B. $-5x^9y^{10}$ C. $-5x^3y^4$ D. $-5x^{18}y^{12}$

5. Simplify $(a-5)^2$

A. $a^2 - 10a + 25$ B. $a^2 + 10a - 25$ C. $a^2 - 25$ D. $a^2 + 25$

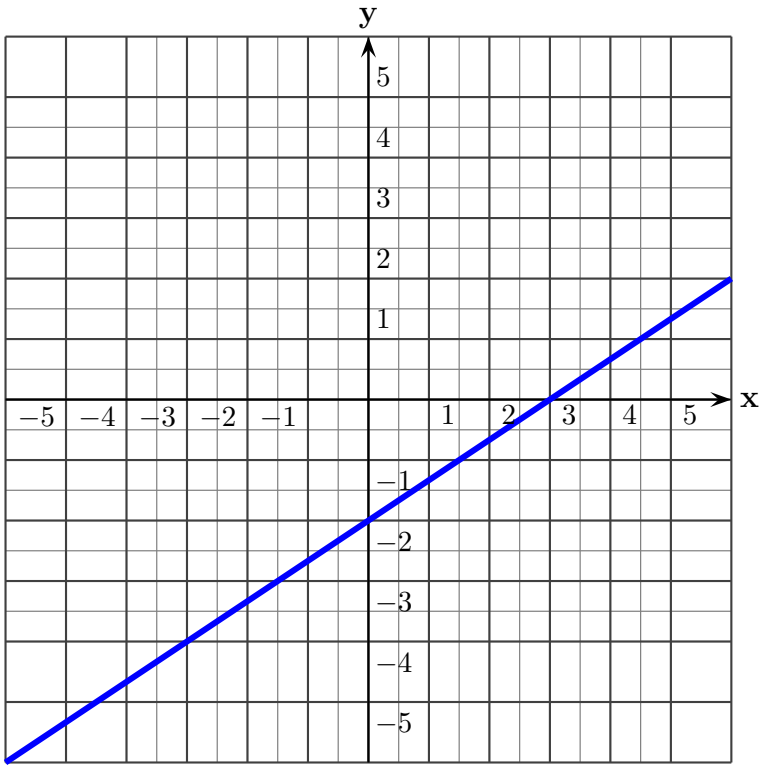
6. Simplify: $(-5x^2 + 4x + 9) - (-2x^2 + 3x - 11)$

7. Simplify. Give your answers using positive exponents only: $(-3x^5y^{-4}w^{-3})^{-2}$

8. Simplify: $\dfrac{30x^7 - 10x^7 + 5x^3}{5x^3}$

9. Multiply: $(x - 5)(x^2 + 5x + 25)$

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



A. $\frac{2}{3}$ B. $-\frac{2}{3}$ C. $\frac{3}{2}$ D. $-\frac{3}{2}$

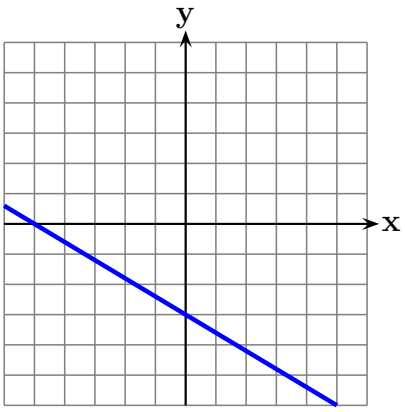
11. Which of the following is a factor of the polynomial: $21ax + 14ab - 10by - 15xy$
A. $2b - 3x$ B. $3b + 2x$ C. $7a - 5y$ D. $7a + 2y$

12. Factor completely: $16a^2b - 100b^3$

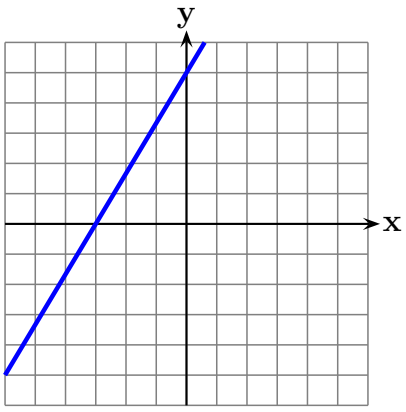
13. Factor completely: $2x^2 - x - 55$

14. Which of the following is the graph of the equation?

$$5x - 3y = 15$$



(A)



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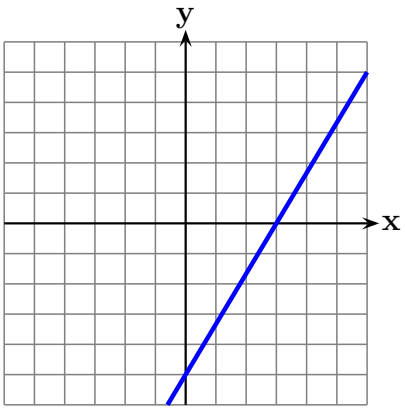

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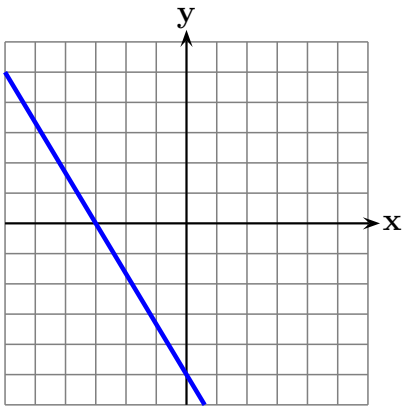


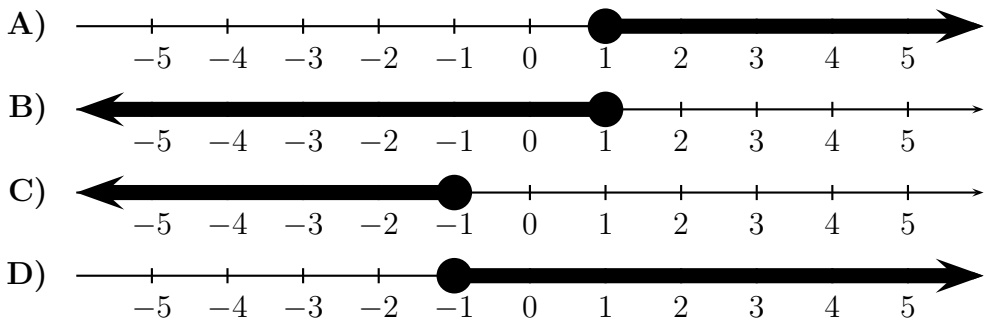
(D)

15. Which of the following is a factor of the polynomial $2x^2 - 7x + 6$

A. $3x - 2$ B. $2x + 3$ C. $x - 2$ D. $x - 4$

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

$$-4x + 1 \geq -3x + 2$$



17. The graph of the line with equation $-3x + 4y = 12$ has

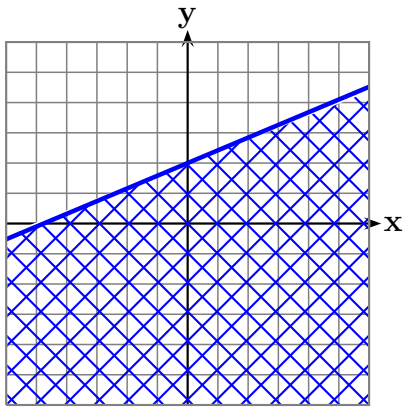
A. Slope $\frac{3}{4}$ and y-intercept $(0, 12$

B. Slope $\frac{4}{3}$ and y-intercept $(0, 12$

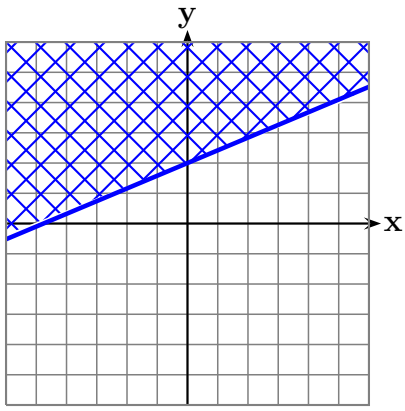
C. Slope $-\frac{3}{4}$ and y-intercept $(0, 3)$

D. Slope $\frac{3}{4}$ and y-intercept $(0, 3)$

18. Find the graph of the solution to the inequality: $-2x + 5y < 10$



(A)



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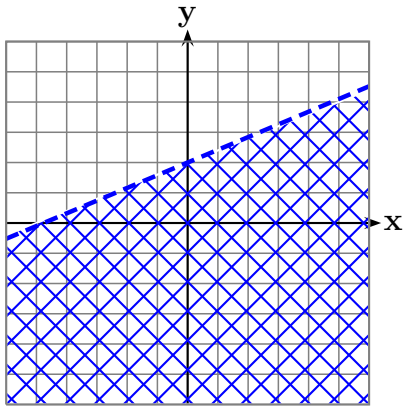

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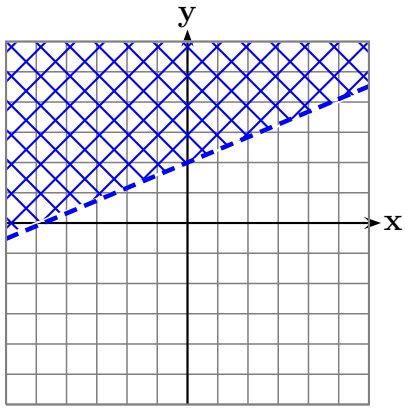

(D)

19. Simplify as much as possible: $2x(x-3)^2 + 2x(x+3)^2 - 3x(x^2 - 5x + 2)$

20. What is the value of the x-coordinate of the solution to the following system of equations?

$$\begin{cases} 5x + y = 17 \\ -2x - 2y = -2 \end{cases}$$

A. $x = 4$ B. $x = -4$ C. $x = 16$ D. $x = -16$

21. A line has slope -3 and passes through the point $(0, 4)$. Find its equation.

22. Factor completely: $2x^3 - 6x^2 - 56x$

23. Factor completely: $3y^2 + 4y - 15$

24. Factor completely: $ax + 2az - aw - bx - 2bz + bw$

25. Multiply: $(x^2 - 4x + 4)(x^2 + 4x + 4)$

26. (8 points) **Extra Credit:** Factor completely: $6x^2y^2 - xy^2 - y^2 - 24x^2 + 4x + 4$