

BRONX COMMUNITY COLLEGE
of the City University of New York

DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE

MATH 05X
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Exam 3
July 10, 2008

Directions: You should fully justify your answers. Do all your work on separate paper, and make sure to *print* your name in the first sheet and staple all the sheets together. **Unstapled, loose pieces of paper will not be graded.** This exam is due on Monday, July 21, at 6:00pm.

1. Evaluate: $-3^2 + 7 - 3(5 - 7) + 4^3 \div (-8) \cdot (-4)$.

2. Evaluate $2a - b$ when $a = 3$ and $y = -3$.

3. Evaluate each of the following expressions when $x = -3$ and $y = -4$.

A. $x^3 - 3x^2y + 3xy^2 - y^3$ B. $(x - y)^3$

4. Solve the equation:

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

5. Solve the equation:

$$\frac{2x - 1}{5} - \frac{3x + 2}{2} = x - 2$$

6. Solve the following inequality, give the answer using interval notation and graph the solution set.

$$3 - 2x \leq 6 - 3(3x + 8)$$

7. A line passes through the points with coordinates $(-1, 5)$ and $(2, -1)$. Find an equation for this line.

8. Find the equation of the line that is parallel to the line $y = -3x + 4$ and has the same y -intercept as the line $2x + 3y = 12$.

9. Graph each of the following lines on the same grid:

(a) $3x + y = -3$

(b) $x - y = -5$

Find the co-ordinates of the intersection of the two lines. Check your answer algebraically.

10. Solve the following inequality: $-3x + 2y \geq 6$.

11. Solve the following system:

$$\begin{cases} 4x - 3y = -3 \\ 3x + 2y = 19 \end{cases}$$

12. Simplify: $\left(\frac{-3x^{-4}y^3z^{-4}}{2x^3y^{-5}z^2}\right)^{-3} (6x^4y^{-5}z^6)^2$.

13. Simplify: $\frac{30a^5b^3 - 25a^3b^2 - 10a^4b^6 + 5a^2b}{5a^2b}$

14. Factor completely: $4a^3b^2 - 9ab^4$

15. Factor completely: $10x^3y^3 + 4xy - 15x^2y^2 - 6$

16. Solve for x : $12x^2 - 27 = 0$

17. Solve for x : $x^2 + 3x - 18 = 0$

18. Solve for x : $2x^3 + 4x^2 = 0$

19. Simplify: $\sqrt{5} \left(\sqrt{4^2 + (-2)^2} - 3\sqrt{35} \right)$

20. The length of a rectangle is 2 cm less than 3 times its width. If the area of the rectangle is 65 cm^2 find its dimensions.