

BRONX COMMUNITY COLLEGE
of the City University of New York

DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE

MATH 05X
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Practice Exam II
July 24, 2008

Directions: The following exam consists of TWENTY questions. Each question is worth 5 points. YOU MUST SHOW ALL WORK TO RECEIVE CREDIT FOR YOUR ANSWERS.

1. Evaluate: $\frac{4}{3}(10^2 + 3(-33)) - \frac{3}{2}$
2. Evaluate: $y + \sqrt{-y^2 + x^2} - x$ when $x = -12$ and $y = 13$.
3. Solve: $5(2x - 4) + 7 = 4(x + 2) - 2x + 3$
4. Solve: $3(x - 1) \leq 5x + 1$. Give your answer using interval notation and graph the solution set in the number line.
5. Write y in terms of x : $-2x + 7y = -28$.
6. Sketch the graph of $x - 2y = 4$. Plot at least three solutions.
7. A line passes through the point with coordinates $(-2, -2)$ and is parallel to the line with equation $4x - 2y = 3$. Find the equation of the line.
8. Solve graphically: $2x < 3y - 6$.
9. Solve the following system:
$$\begin{cases} 2x + 3y = 12 \\ 3x - 2y = 5 \end{cases}$$
10. At 3 pm two buses leave a town heading in the same direction. If one bus is traveling at 65 mph and the other at 56 mph, what time is it when they are 45 miles apart?
11. Multiply: $(x^2 - 3x + 7)(-2x^2 + 2x - 5)$
12. Divide: $\frac{x^3 - 7x^2 - 3x + 21}{x^2 - 3}$
13. Factor completely: $4x^4 - 12x^3 - 40x^2$
14. Factor completely: $x^2y^2 - 9x^2 - 4y^2 + 36$

15. Simplify:

$$\left(\frac{25x^{-7}y^8}{9x^{11}y^{-6}}\right)^{\frac{1}{2}} \left(\frac{3x^3}{y^2}\right)^3$$

Write your answer using only positive exponents.

16. Simplify: $3\sqrt{2}(5\sqrt{50} - 3\sqrt{18} + \sqrt{20})$.

17. Perform the indicated operations:

$$\frac{(3 - 4i)(-1 + 2i)}{2 - i}$$

Write the result in standard $a + bi$ form.

18. Solve $x^2 + 7 = 4x$. Express your answer in simple radical form.

19. The hypotenuse of a right triangle is three centimeters less than three times the length of the shorter of its legs. The longer leg is seven centimeters more than the shorter. Find the lengths of all three sides.

20. Graph: $y = x^2 - 4x + 5$. Indicate the axis of symmetry, the vertex and the x - and y -intercepts.