

**BRONX COMMUNITY COLLEGE**  
of the City University of New York

**DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE**

MATH 05X  
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Practice Exam I  
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**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:  $\frac{3}{4}(-5^2 - (-3))$
2. Evaluate:  $\sqrt{4xy - y^2}$  when  $x = -5$  and  $y = -4$ .
3. Solve:  $-3(2x - 2) = 5(2x + 14)$
4. Find the slope and the  $y$ -intercept of the following line:  $3x - 4y = 12$ .
5. Sketch the graph of  $5x + 2y = 10$ . Plot at least three solutions.
6. A line passes through the points with coordinates  $(-2, 7)$  and  $(3, -3)$ . Find an equation for this line.
7. Solve the following system:
$$\begin{cases} 2x - 3y = 11 \\ 4x - y = 17 \end{cases}$$
8. At 2 pm two buses leave a town heading in opposite directions. If one bus is traveling at 58 mph and the other at 64 mph, what time is it when they are 854 miles apart?
9. Subtract:  $(6x^2 - 7x + 4) - (3x^2 - 8x - 2)$
10. Multiply:  $(2x - 3)(x^3 - 2x^2 + 3x - 2)$
11. Divide:  $\frac{2x^2 + 7x - 15}{x + 5}$
12. Factor completely:  $7x^3 - 28x$
13. Factor completely:  $10x^2 - 11x - 6$

14. Simplify:

$$\left(\frac{16x^{13}y^9}{x^5y^{17}}\right)^{\frac{3}{4}}$$

Write your answer using only positive exponents.

15. Simplify:  $3\sqrt{18} - 4\sqrt{200} + 7\sqrt{12}$

16. Divide:  $\frac{3-i}{2+5i}$ . Write the result in standard  $a+bi$  form.

17. Solve  $x^2 - 4x = 1$ . Express your answer in simple radical form.

18. The length of a rectangle is 3 cm less than 4 times its width. If the area of the rectangle is  $5\text{ cm}^2$  find its dimensions.

19. One side of a right triangle is two inches less than twice the other. If the hypotenuse is 5 inches, find the lengths of the other two sides.

20. Graph:  $y = x^2 - 2x - 3$ . Indicate the axis of symmetry, the vertex and the  $x$ - and  $y$ -intercepts.