

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

**DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE**

MATH 06  
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Exam 1  
October 15, 2009

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 5 points**

1. Combine:  $\frac{5}{x-2} - \frac{18}{x^2+2x-8}$

2. Multiply:  $\frac{2x-3}{x^2-4} \cdot \frac{x^2-x-6}{2x^2-5x+3} \cdot \frac{2x^2-2x}{x^2-9}$

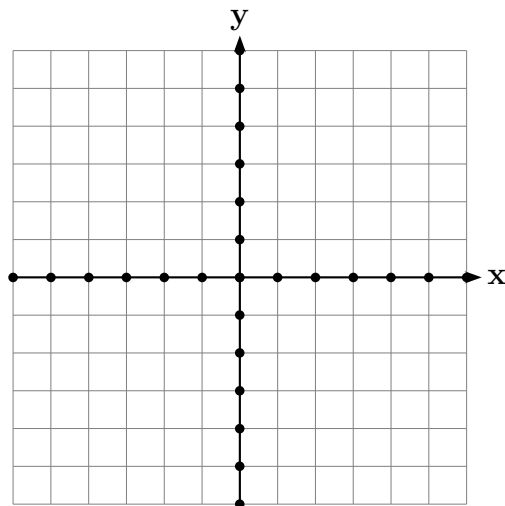
3. Divide:  $\frac{5b}{b+6} \div \frac{b^2-6b}{b^2+3b-18}$

4. Simplify:  $\frac{\frac{6}{x-2} - \frac{2}{x}}{4}$   
 $\frac{\quad}{x^2-2x}$

5. Solve:  $\frac{x}{x+2} = 3 - \frac{2}{x+2}$

6. Solve:  $\frac{2}{x-2} + \frac{15}{x^2 - 7x + 10} = \frac{3}{x-5}$

7. Sketch the graph of  $y = |x + 2|$ . Be sure to indicate clearly the critical point, the axis of symmetry and at least one point on either side of the axis of symmetry.



8. Solve algebraically:  $|3x - 6| \leq 12$ .

9. Solve algebraically:  $|5x - 1| > 4$

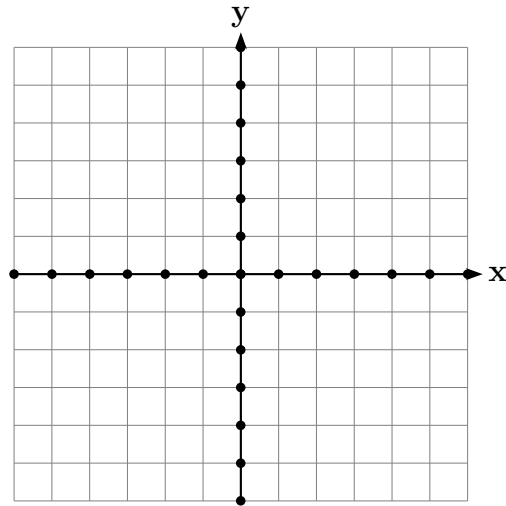
10. Solve:  $\sqrt{x+4} - 2x = -7$

11. Simplify:  $5\sqrt{18} - \sqrt{300} + 3\sqrt{12}$

12. Verify that:  $\sqrt{49 - 12\sqrt{5}} = 2 - 3\sqrt{5}$

13. Rationalize the denominator:  $\frac{\sqrt{3} - 2}{\sqrt{2} - \sqrt{3}}$

14. Sketch the graph of  $-x + 3y \leq -3$ .



15. Evaluate:  $(2 - 3i)(3 + 2i)$

16. Evaluate  $\frac{z^2 - z - 5}{z}$  when  $z = 1 - 2i$ . Express your answer in the form  $a + bi$  where  $a$  and  $b$  are real numbers.

17. Solve:  $2x - 13 = 4x$

18. Solve:  $x^2 - 4x + 7 = 0$

19. Factor:  $x^2 - 2x + 5$

20. Find  $c$  if the  $x^2 - 10x + c = 0$  has a double solution.