

BRONX COMMUNITY COLLEGE
of the City University of New York

DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE

MATH 06
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Practice Exam
May 10, 2011

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. Subtract. Simplify your answer as much as possible: $\frac{3}{x-5} - \frac{18}{x^2-2x-15}$

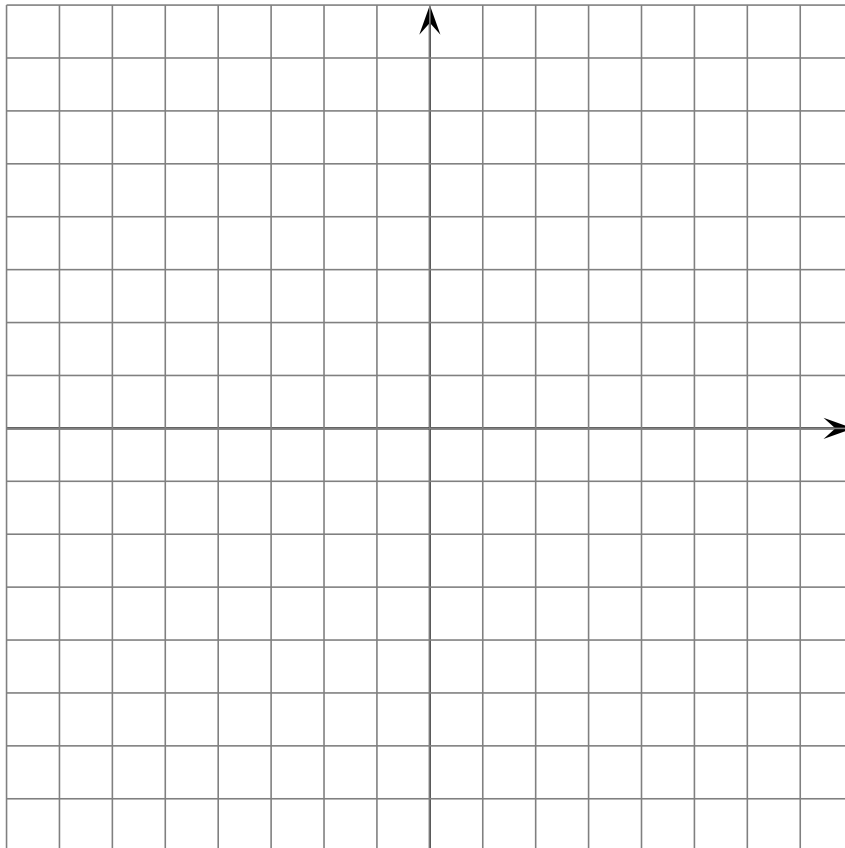
2. Divide. Simplify your answer as much as possible: $\frac{2b}{b-3} \div \frac{b^2+3b}{b^2-3b-18}$

3. Solve: $\frac{3}{x+7} - \frac{5}{x^2+2x-35} = \frac{44}{x-5}$

4. Solve: $\sqrt{x-2} + 8 = x$

5. Simplify: $\frac{\frac{5}{x-3} - \frac{2}{x+3}}{\frac{3}{x^2-9}}$

6. Graph the parabola $x = y^2 - 4y + 3$. Your graph should correctly indicate the vertex, the axis of symmetry, the y -intercepts, the x -intercept and the point symmetric to the x -intercept.



7. Solve: $2x^2 - 3 = 6x$

8. Find the center and radius of the circle with equation $y^2 - 4y + x^2 + 2x = -2$

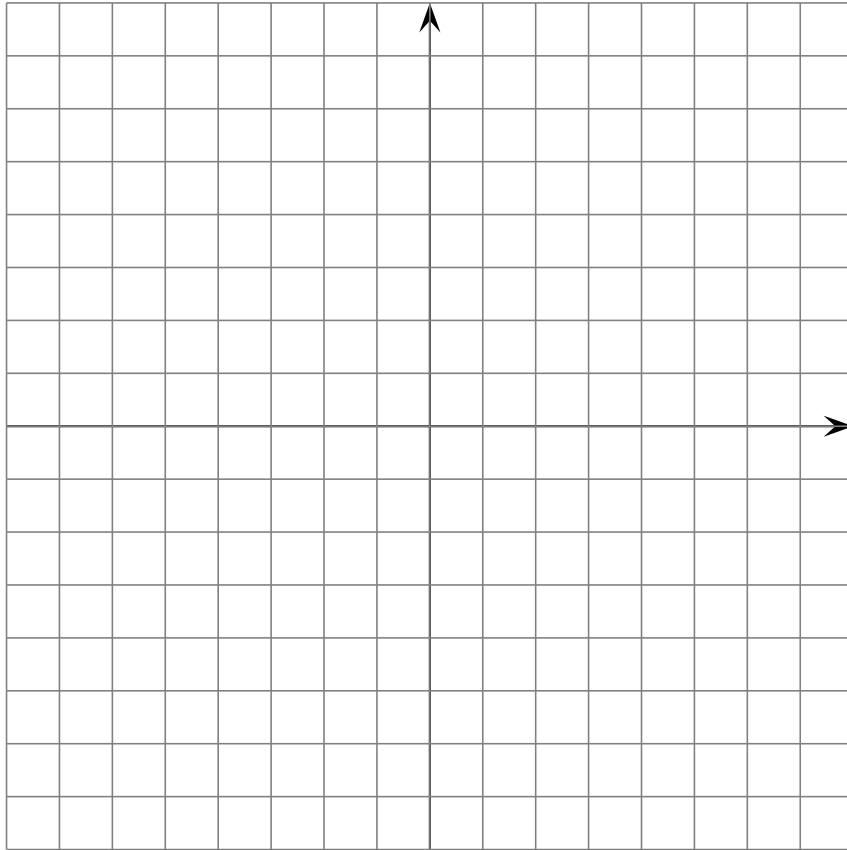
9. Simplify: $\left(\frac{-8x^{-20}y^{13}}{xy^4}\right)^{-\frac{1}{3}}$. Assume all variables represent positive numbers. The answer should contain only positive integers as exponents.

10. Divide: $\frac{15i - 5}{3 + i}$. Express your answer in the form $a + bi$ where a and b are real numbers.

11. Find an equation of the line tangent of the circle $(x - 1)^2 + (y + 2)^2 = 4$ at the point $(3, -2)$.

12. Determine the equation of the parabola with focus $(0, 2)$ and directrix $y = -4$.

13. Graph the hyperbola with equation $\frac{y^2}{9} - \frac{x^2}{25} = 1$. The graph should correctly indicate the vertices, the foci and the asymptotes of the hyperbola.



14. Find the common points of the line $y = x + 4$ and the conic section $2y^2 - 12y + x^2 + 2x = -16$.

15. Simplify:

(a) $5\sqrt{12} - \sqrt{200} + 3\sqrt{18}$

(b) $(1 - \sqrt{3})^2$

16. In a right triangle ABC we have $C = 90^\circ$, $a = 3$, and $c = 5$ inches. Solve the triangle.

17. Find the exact value of each:

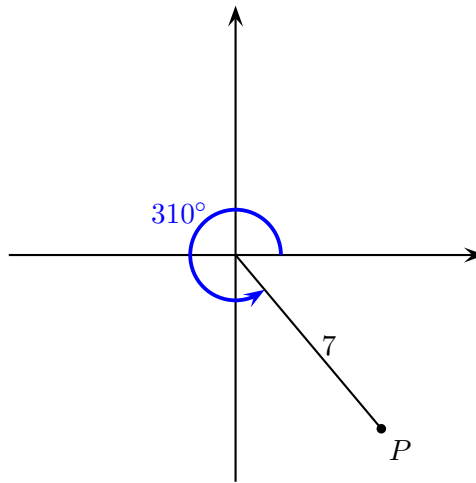
(a) $\tan 270^\circ \cdot \sin 225^\circ$

(b) $\cos 1200^\circ$

18. Find all angles θ , between 0° and 360° with $\sin \theta = -0.656$. Round your answers to the nearest tenth of a degree.

19. The angle of elevation from a sailboat in a lake to the top of a cliff is 75° . The sailboat is 300 feet from the foot of the cliff. How high is the cliff? Round your answer to the nearest foot.

20. (a) Find the coordinates of the point P . Round your answer to the nearest hundredth.



- (b) Find the length of the arc α , where the corner of the angle is at the center of the circle. Give an exact answer.

