BRONX COMMUNITY COLLEGE

of the City University of New York

DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE

MATH 06 Nikos Apostolakis	Exam 2 March 24, 2011
Name:	
Directions: Write your answers in the provide show all your work. Simplify your answers wheneyour final answer clearly. Each problem is wo	ever possible. Be certain to indicate
1. In a triangle ABC we have $B = 90^{\circ}$, $a = \sqrt{7}$, and	and $b = \sqrt{13}$. Find c .
2. The sum of the lengths of the legs of a right tr cm long. Find the lengths of the two legs.	riangle is 6 cm. The hypotenuse is $4\sqrt{2}$
3. Simplify: $5\sqrt{44} + 2\sqrt{99} - 15\sqrt{11}$	

4. Simplify:
$$(\sqrt{15} - 3)(\sqrt{3} + \sqrt{5})$$

5. Simplify:
$$(5 - \sqrt{5})^2 - 30 + 10\sqrt{5}$$

6. Simplify, assuming all variables represent positive numbers:
$$\sqrt{\frac{49a^5b^4}{18c^6}}$$

7. Simplify assuming all variables represent positive numbers. The answer should contain only positive integers as exponents.

$$\left(\frac{x^{10}y^{-5}}{z^{\frac{20}{3}}}\right)^{\frac{3}{5}}$$

8. Solve:
$$x - \sqrt{x - 4} = 10$$

9. Solve:
$$\sqrt{x+5} - \sqrt{x} = 1$$

10. Multiply. Express your answer in the form a + bi where a and b are real numbers.

$$(2+5i)(-2+3i)$$

11. Divide. Express your answer in the form a + bi where a and b are real numbers.

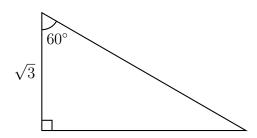
$$\frac{2-4i}{1-i}$$

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

13. Simplify:
$$\frac{x^2 + 2x - 15}{x^2 - 10x + 21}$$

14. Divide :
$$\frac{x^2 - 3x + 2}{x + 3} \div \frac{x^2 - 2x + 1}{x^2 + 5x + 6}$$
. Simplify the result as much as possible.

15. Find the area of the following triangle. Give an exact answer.



16. The angle of depression of a ship observed from the window of a lighthouse 200 ft above the sea level is 5° . How far is the ship?

17. Find the sine, cosine, tangent, and cotangent of 990°. Give exact answers.

18. For an angle θ in the third quadrant we have $\tan \theta = \frac{3}{4}$. Find $\sin \theta$.

19. A point P is at distance 4 from the origin (0,0) and has angle of reference 143.1301°. Find the coordinates of P.

20. Find the angle θ .

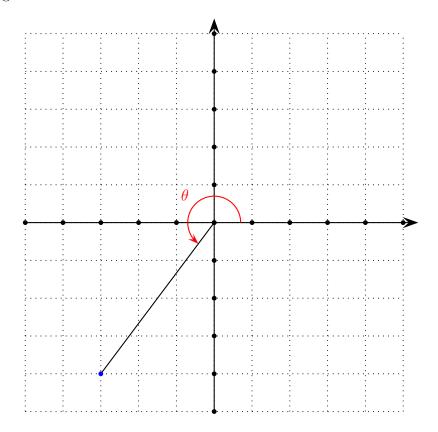


Table of trigonometric values

θ	$\sin \theta$	$\cos \theta$	$\tan \theta$	$\cot \theta$
0°	0	1	0	und
30°	$\frac{1}{2}$	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{3}}{3}$	$\sqrt{3}$
45°	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{2}}{2}$	1	1
60°	$\frac{\sqrt{3}}{2}$	$\frac{1}{2}$	$\sqrt{3}$	$\frac{\sqrt{3}}{3}$
90°	1	0	und	0