

Student ID		

Last Name: \_\_\_\_\_

First Name: \_\_\_\_\_

Show all your work.  
If necessary, use extra sheets.

When appropriate,  
**BOX** your final answer.

M\$5  
Homework

# 33

<p>1. The domain of the equation below is all real numbers</p> $y = \frac{1}{(x-1)^2}$ <p>(1) greater than 1                      (3) less than 1 (2) except 1                              (4) except 1 and -1</p>	<p>2. If <math>f(x) = kx^2</math> and <math>f(2) = 12</math>, then what is the value of <math>k</math>?</p>
<p>3. What is the domain of <math>f(x) = \frac{1}{\sqrt{4-x^2}}</math>?</p> <p>(1) <math>x &lt; 2</math>                              (3) <math>-2 &lt; x &lt; 2</math> (2) <math> x  \leq 2</math>                            (4) all real numbers</p>	<p>4. The domain for <math>f(x) = x^2 - 3</math> is <math>0 \leq x \leq 4</math>. The smallest value in the range of <math>f(x)</math> is</p> <p>(1) 0    (3) -3 (2) 16    (4) 4</p>
<p>5. Find all values of <math>x</math> for which <math>f(x)</math> is undefined.</p> $f(x) = \frac{4}{ x  - 2}$	<p>6. If <math>f(x) = \frac{2}{x+3}</math> and <math>g(x) = \frac{1}{x}</math>, find <math>(g \circ f)(x)</math> in simplest form.</p>
<p>7. Write a quadratic equation with integral coefficients whose roots are <math>\frac{1+\sqrt{2}}{2}</math> and <math>\frac{1-\sqrt{2}}{2}</math>.</p>	<p>8. Given the number <math>a + bi</math> with <math>b = 0</math>, which must be true?</p> <p>(1) It is a real number. (2) It is a rational number. (3) It is a pure imaginary number. (4) It is an imaginary number.</p>

9. Which equation has rational roots?

- (1)  $x^2 + 8x - 8 = 0$
- (2)  $x^2 + 8x + 9 = 0$
- (3)  $2x^2 + 4x + 5 = 0$
- (4)  $3x^2 + 8x + 4 = 0$

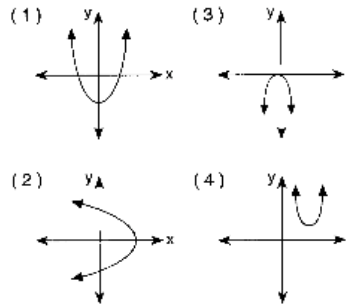
10. Express the multiplicative inverse in simplest

$a + bi$  form:  $\frac{-2 - 3i}{3 + 2i}$

11. Solve for  $z$ :  $\sqrt{z} - 3 = \sqrt{z - 27}$

12. a) Which diagram could represent the graph of an equation with imaginary roots?

b) Which diagram does *not* represent a function?



13. If  $f(x) = 2x^2 + 4$  and  $g(x) = x - 3$ , find all values of  $x$  that satisfy the equation  $f(x) = (f \circ g)(x)$ .