Name: _____ M$6 Classwork 1

1. Which inequality states that the temperature, t, in a room is less than 3° from 68°?
   (1) $|3-t|<68$ (3) $|68-t|<3$
   (2) $|3+t|<68$ (4) $|68+t|<3$

2. In which quadrant does the sum of $\frac{3}{2}i+\frac{5}{2}$ and $-\frac{4}{3}i-\frac{7}{3}$ lie?

3. Evaluate each of the following:
   $\log_2 2$
   $\log_3 3$
   $\log_8 8$
   $\log_b b$

4. Evaluate each of the following:
   $\log_2 2^4$
   $\log_3 3^2$
   $\log_5 5^3$
   $\log 10^n$
   $\log_b b^n$

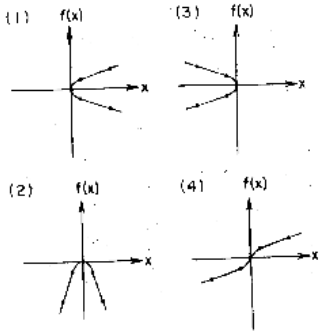
5. State the domain and range of each function:
   a) $y=10^x+5$
   b) $y=\log(x-5)$

6. Solve algebraically for x:
   $\left(\frac{1}{49}\right)^{x+1}=343^x$

7. Express in simplest radical form:
   $\frac{\sqrt{32}}{\sqrt{10}-2\sqrt{3}}$

8. In which quadrant would the image of point (5,–3) fall after a dilation using a factor of –3?

9. If $f(x)=x^2$, which of the graphs to the right represents the inverse of $f(x)$?



10. The roots of the equation $3x^2-4x-5=0$ are
    (1) real, rational, and equal
    (2) real, rational, and unequal
    (3) real, irrational, and unequal
    (4) imaginary

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

11. Solve for x: $\dfrac{x}{x-5} - \dfrac{2}{x+5} = \dfrac{50}{x^2-25}$.

11.

12. Solve for x and express your answer in simplest $a+bi$ form:

$x^2 + 29 = 4x$

12.

13. If $g(x) = \left(\dfrac{1}{64}\right)^x$ and $f(x) = x^{\frac{5}{2}}$, find $(f \circ g)(-\frac{1}{3})$.

13.

14. Which of the following is *not* true about the graph of the equation $y = \left(\dfrac{1}{5}\right)^{-x}$?

(1) It contains the point (0, 1).

(2) Its domain is all real numbers and its range is all positive real numbers.

(3) It is the inverse of $y = \left(\dfrac{1}{5}\right)^x$.

(4) It is the same as the graph of $y = 5^x$.

14.

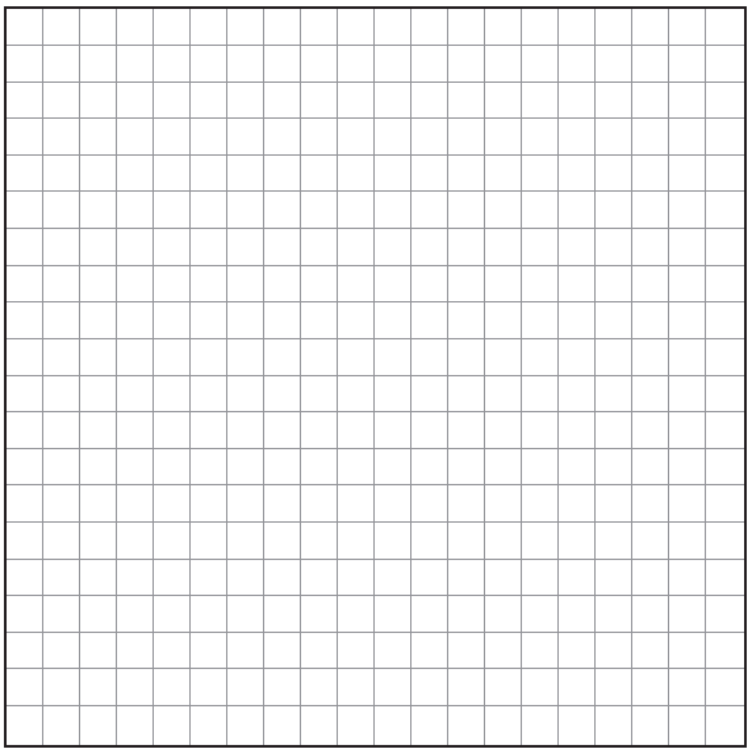
15. a) Draw the graph of the equation $y = -2x^2 + 8x$ for all values of x from $x = -1$ to $x = 5$.

b) State the equation of the axis of symmetry.

c) Draw the image of the parabola drawn in part *a* after a reflection in the line $y = x$, and state its equation.

d) State the equation of the axis of symmetry of the parabola drawn in part *c*.

e) Describe the relationship between the equations of the two parabolas.



15.