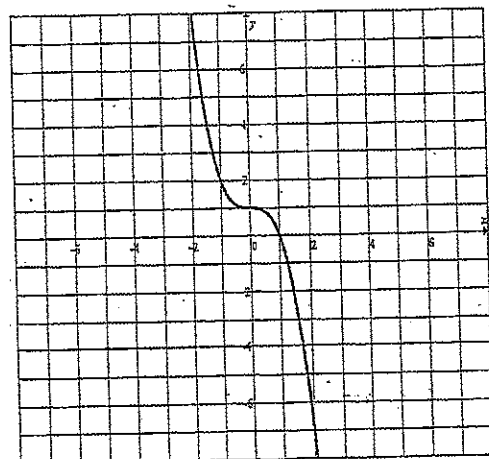
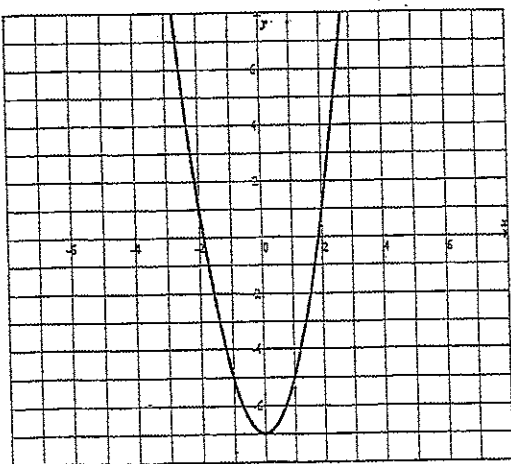


Assignment – Reflections

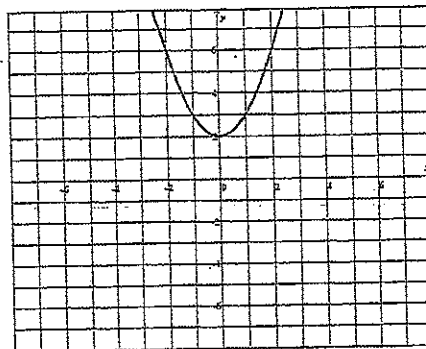
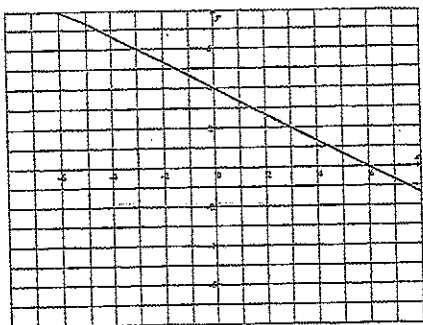
- Write an equation for the function that is described by the given characteristics:
 - The shape $y = \sqrt{x}$, reflected in the x -axis
 - The shape $y = x^3$, reflected in the y -axis
 - The shape of $y = f(x)$, reflected in the x -axis and y -axis.
- If $(-3, 1)$ and (a, b) is a point on the graph of $y = f(x)$, what must be a point on the graph of the following?
 - $y = -f(x)$
 - $y = f(-x)$

- Transform each function. The graph of the original function is given. Transform the function on the same coordinate.
 - $f(x) = 2x^2 - 7$, reflect over x -axis
 - $f(x) = -x^3 + 1$, reflect over y -axis

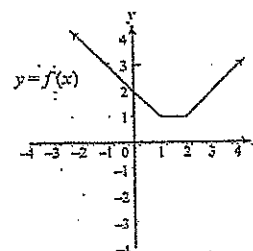


c) $f(x) = -\frac{2}{3}x + 4$, reflect over the x -axis

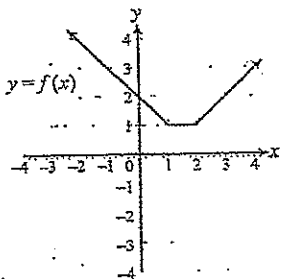
d) $f(x) = x^2 + 2$, reflect over the y -axis.



4. Given the graph of $y = f(x)$ below, sketch the graphs of the following:



a) $y = -f(-x)$



5. If $(-2, 4)$ is a point on the graph of $y = f(x)$, what must be a point on the following graphs?

a) $y = f(x - 2)$

b) $y = -f(x)$

c) $y = f(-x)$

d) $y = -f(-x)$

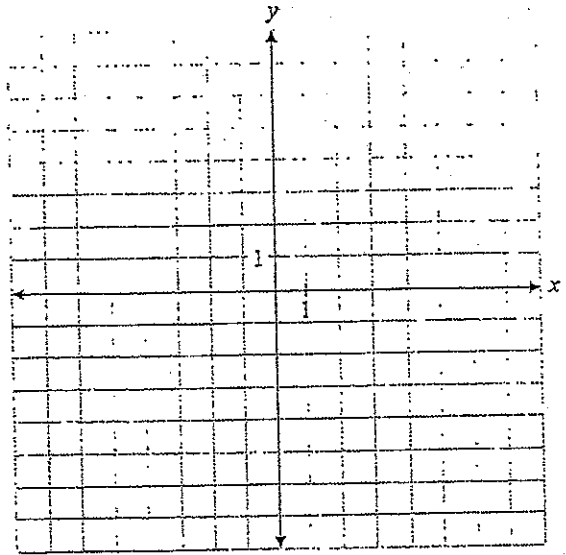
6. If the domain of $y = f(x)$ is $[-2, 7)$, determine the domain after applying the following transformations to $f(x)$:

$y = -f(-x)$

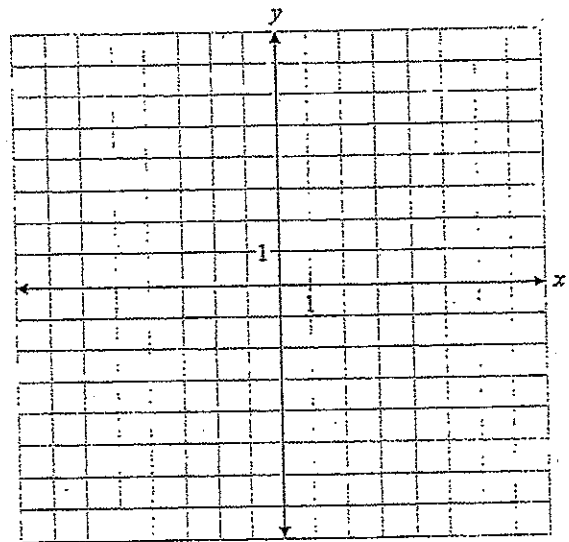
7. The range of $y = f(x)$ is $y \leq 10$. Determine the range after applying the following transformations to $f(x)$:

$y = f(-x)$

8. a) Sketch the graph of $y = |x|$.
 b) Sketch the graph of $y = -|x|$.
 c) Determine the domain and range of the transformed function.



9. a) Sketch the graph of $y = \sqrt{x}$.
 b) Sketch the graph of $y = -\sqrt{-x}$.
 c) Determine the domain and range of the transformed function.



10. Write the equations of the following functions after:

- i. A Reflection over the x-axis
- ii. A Reflection over the y-axis

a) $y = x^3 - 2x^2 + 3x + 5$

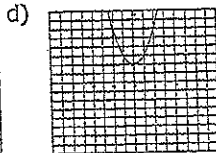
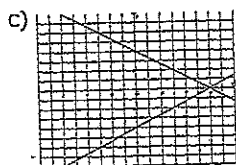
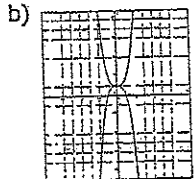
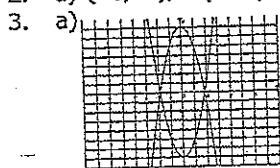
b) $y = 2\sqrt{x-3} + 4$

c) $y = |2x - 2| - 1$

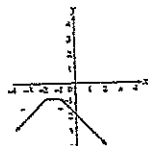
Answers:

1. a) $y = -\sqrt{x}$ b) $y = -x^3$ c) $j(x) = -f(-x)$

2. a) $(-3, -1)$, or $(a, -b)$ b) $(3, 1)$, or $(-a, b)$



4. a)

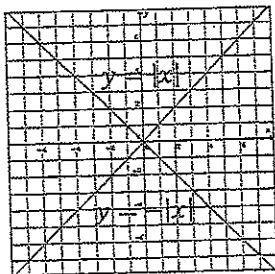


5. a) (0,4) b) (-2,-4) c) (2,4) d) (2,-4)

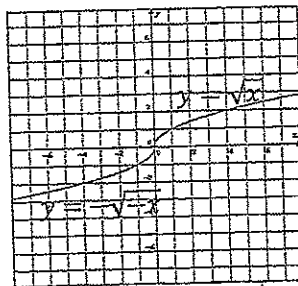
6. $(-7, 2]$

7. $y \leq 10$

8. Domain: $(-\infty, \infty)$, Range: $(-\infty, 0]$



9. Domain: $(-\infty, 0]$, Range: $(-\infty, 0]$



10. a) i) $y = -x^3 + 2x^2 - 3x - 5$

b) i) $y = -2\sqrt{x-3} + 4$

c) i) $y = -|2x-2| + 1$

ii) $y = -x^3 - 2x^2 - 3x + 5$

ii) $y = 2\sqrt{-x-3} + 4$

ii) $y = |-2x-2| - 1$