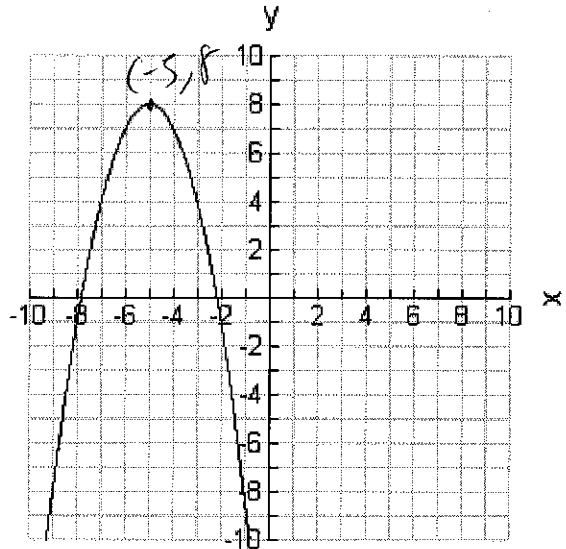


Section A. Multiple Choice (10 marks) Please send the answers only using the answer sheet attached. Do not send in the copies of the multiple choice questions.

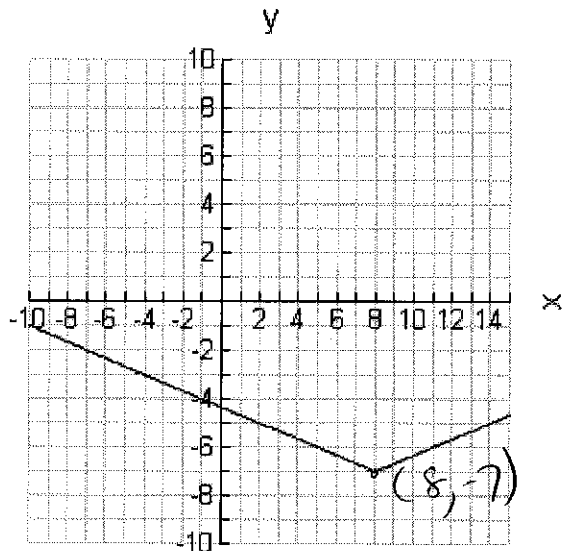
1) What is the horizontal translation for the transformed quadratic function that you see to the right?

- a) -8
- b) -5
- c) 5
- d) 8



2) What is the vertical shift for the transformed absolute value function that you see to the right?

- a) -7
- b)  $-\frac{1}{3}$
- c)  $\frac{1}{3}$
- d) 7



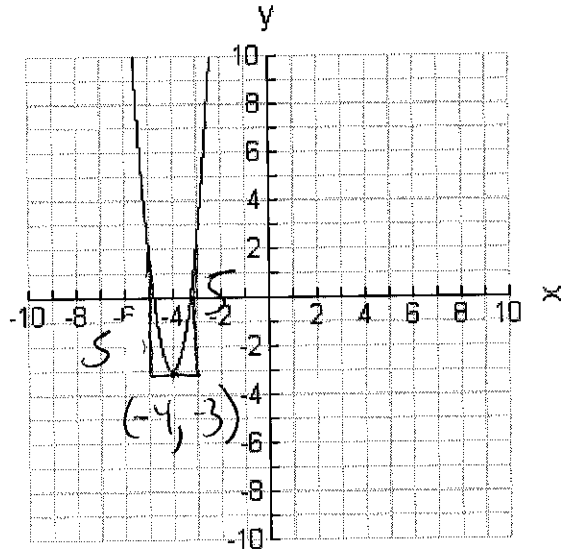
3) What is the mapping notation that transforms the function  $y = x^2$  to the function that is graphed to the right?

a)  $(x, y) \rightarrow (x - 4, 5y - 3)$

b)  $(x, y) \rightarrow (x + 4, 5y + 3)$

c)  $(x, y) \rightarrow \left(x + 4, \frac{1}{5}y + 3\right)$

d)  $(x, y) \rightarrow \left(x - 4, \frac{1}{5}y - 3\right)$



4) The graph of  $y = |x|$  is transformed under the mapping notation of  $(x, y) \rightarrow \left(x + \frac{1}{2}, -\frac{1}{3}y + \frac{3}{11}\right)$ . Which equation below would represent the transformed graph?

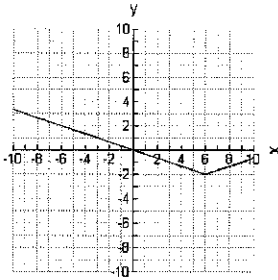
a)  $-3\left(y - \frac{3}{11}\right) = \left(x - \frac{1}{2}\right)^2$

b)  $-\frac{1}{3}\left(y + \frac{3}{11}\right) = \left|x + \frac{1}{2}\right|$

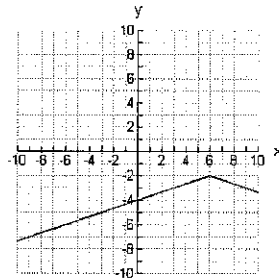
c)  $-\frac{1}{3}\left(y + \frac{3}{11}\right) = \left(x + \frac{1}{2}\right)^2$

d)  $-3\left(y - \frac{3}{11}\right) = \left|x - \frac{1}{2}\right|$

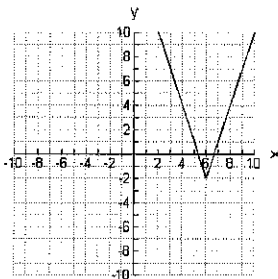
- 5) The graph of  $y = |x|$  is transformed to produce the equation  $\frac{1}{3}(y+2) = |x-6|$ . Which graph below represents the transformed equation?



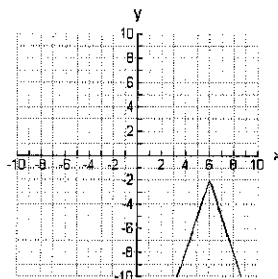
a)



b)

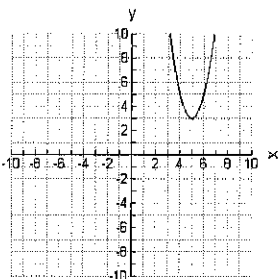


c)

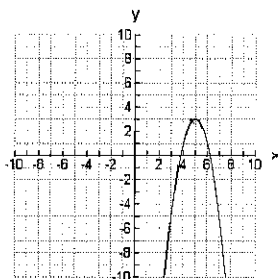


d)

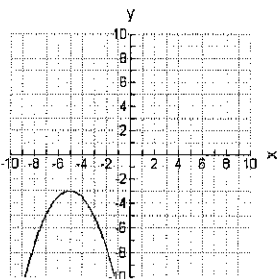
- 6) Which image below represents the graph of  $y = x^2$  transformed under the mapping  $(x, y) \rightarrow (x+5, -2y+3)$ ?



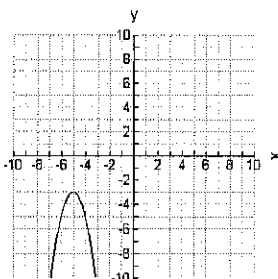
a)



b)



c)



d)

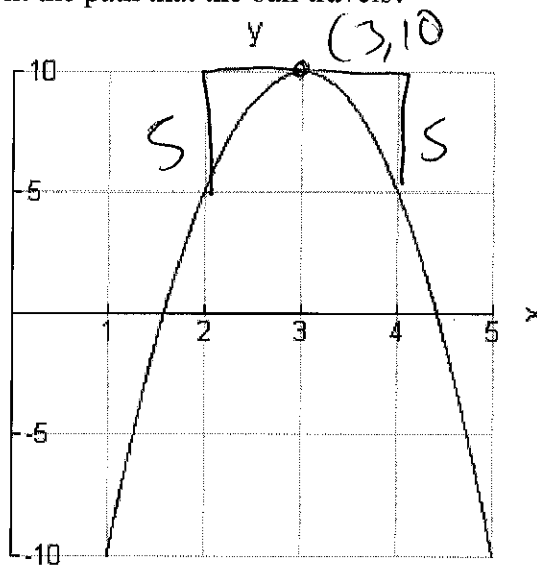
7) What is the mapping notation that transforms the function  $y = |x|$

to  $\frac{4}{5}\left(y - \frac{8}{3}\right) = \left|x + \frac{2}{7}\right|$ ?

- a)  $(x, y) \rightarrow \left(x + \frac{2}{7}, \frac{4}{5}y - \frac{8}{3}\right)$
- b)  $(x, y) \rightarrow \left(x - \frac{2}{7}, \frac{5}{4}y + \frac{8}{3}\right)$
- c)  $(x, y) \rightarrow \left(x - \frac{2}{7}, -\frac{4}{5}y + \frac{8}{3}\right)$
- d)  $(x, y) \rightarrow \left(x - \frac{7}{2}, \frac{5}{4}y + \frac{3}{8}\right)$

8) The height of a projectile over time is recorded and displayed in the graph to the right. Which equation below would represent the path that the ball travels?

- a)  $-(y - 10) = (x - 3)^2$
- b)  $-\frac{1}{5}(y - 10) = (x - 3)^2$
- c)  $(y - 10) = (x - 3)^2$
- d)  $-5(y - 10) = (x - 3)^2$



9) An absolute value function has a vertex of (3,-4), a vertical stretch of  $\frac{2}{5}$  and the graph does appear to be reflected. Which answer below would represent the equation for the parabola?

a)  $\frac{5}{2}(y+4) = |x-3|$

b)  $-\frac{2}{5}(y+4) = |x-3|$

c)  $-\frac{5}{2}(y+4) = |x-3|$

d)  $-\frac{2}{5}(y-4) = |x+3|$

10) The standard form of a quadratic function is written as  $y = a(x-h)^2 + k$ . What is the equation  $-\frac{1}{5}(y+2) = (x-7)^2$  written in standard form?

a)  $y = 5(x-7)^2 - 2$

b)  $y = -2(x-7)^2 + \frac{1}{5}$

c)  $y = -\frac{1}{5}(x-7)^2 + 2$

d)  $y = -5(x-7)^2 - 2$

1	b
2	a
3	a
4	d
5	c
6	b
7	b
8	b
9	c
10	d

Section B Long Answers (40 Marks). Please include all workings.

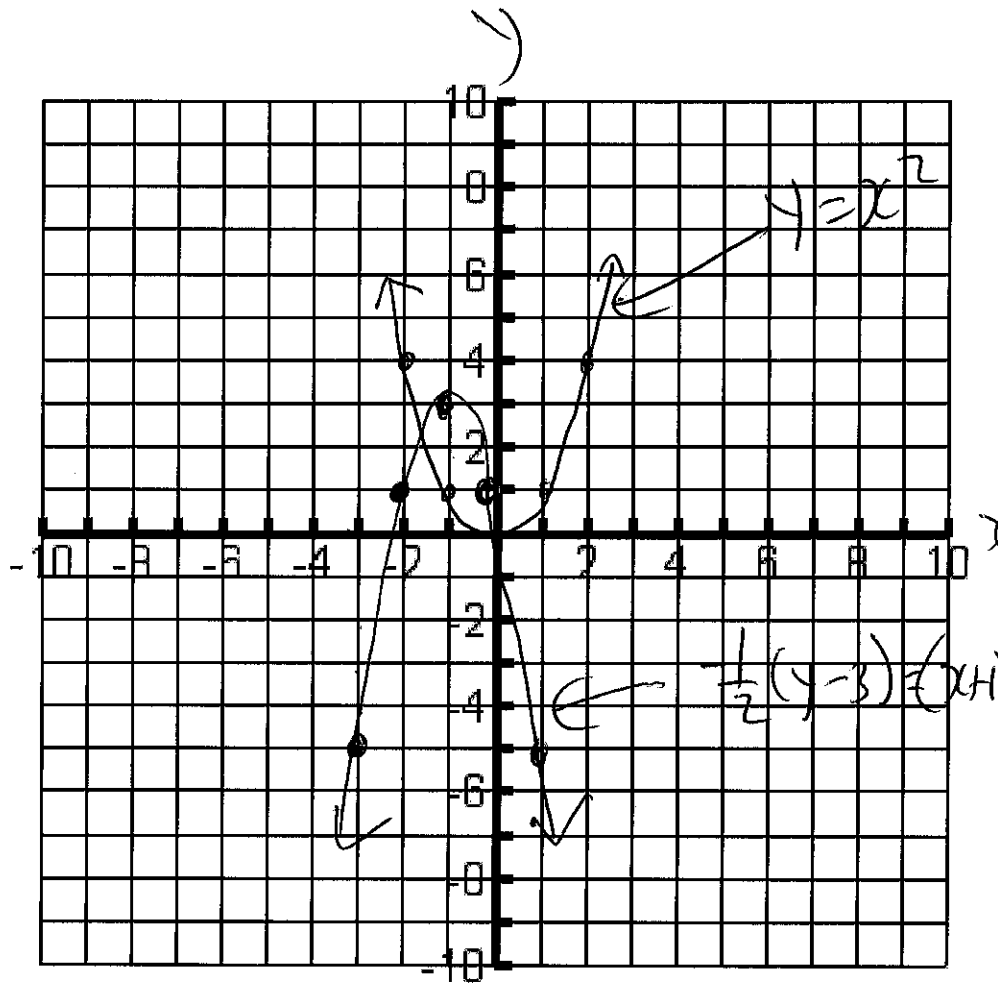
1. Complete the two tables of values, graph  $y = x^2$  and  $-\frac{1}{2}(y-3) = (x+1)^2$  on the grid below. As well fill in the correct mapping notation as indicated below. Show all possible workings for full marks. (10 marks)

$y = x^2$

x	y
-2	4
-1	1
0	0
1	1
2	4

$-\frac{1}{2}(y-3) = (x+1)^2$

x	y
-3	-5
-2	1
-1	3
0	1
1	-5



Mapping Notation:  $(x, y) \rightarrow (x-1, -2y+3)$

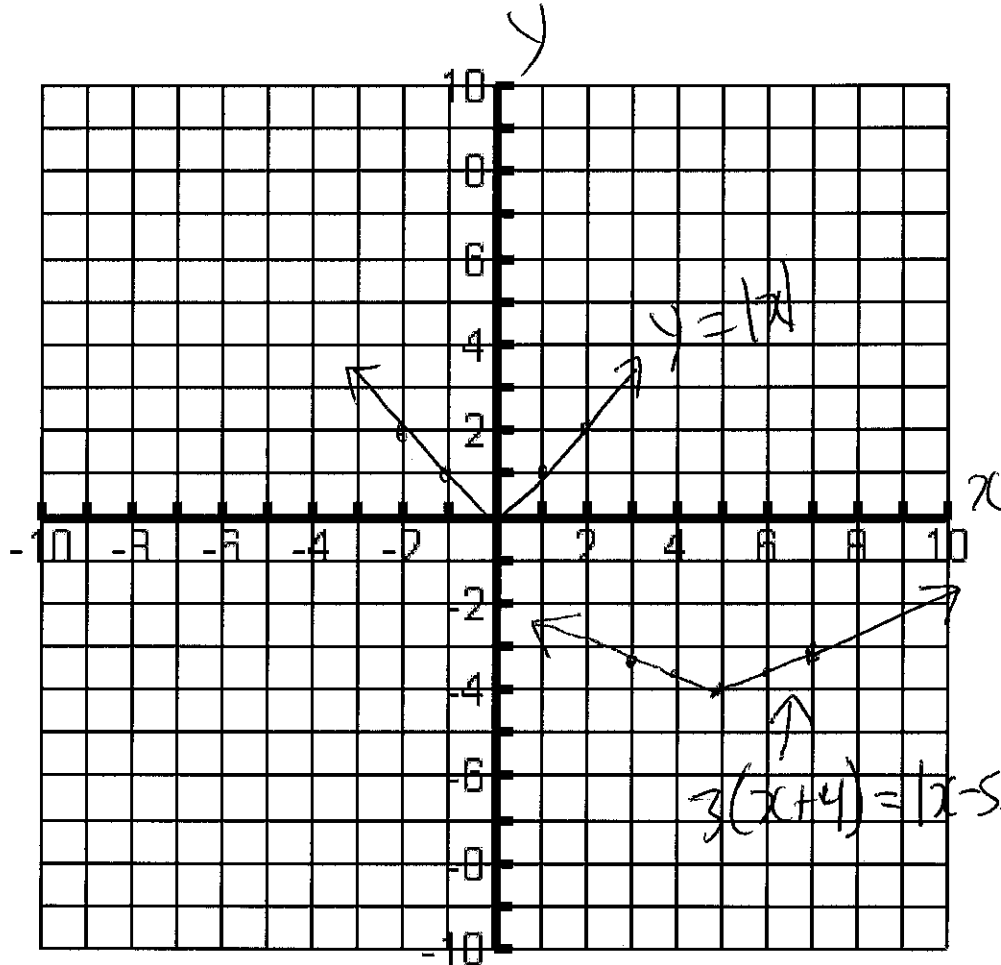
2. Complete the two tables of values, graph  $y = |x|$  and  $3(y+4) = |x-5|$  on the grid below. As well fill in the correct mapping notation as indicated below. Show all possible workings for full marks. (10 marks)

$y = |x|$

x	y
-2	2
-1	1
0	0
1	1
2	2

$3(y+4) = |x-5|$

x	y
3	$-\frac{10}{3}$ or -3.3
4	$-\frac{11}{3}$ or -3.6
5	-4
6	$-\frac{11}{3}$
7	$-\frac{10}{3}$

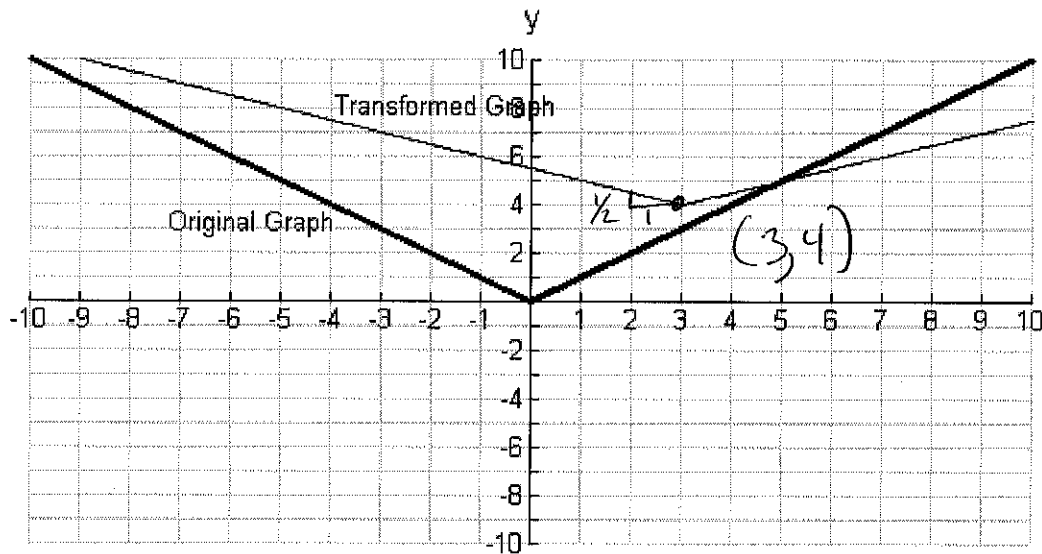


Mapping Notation:  $(x, y) \rightarrow (x+5, \frac{1}{3}y-4)$



3. For the following graphs, fill in the information as requested.

a. (10 marks)



Horizontal translation: 3

Vertical Shift: 4

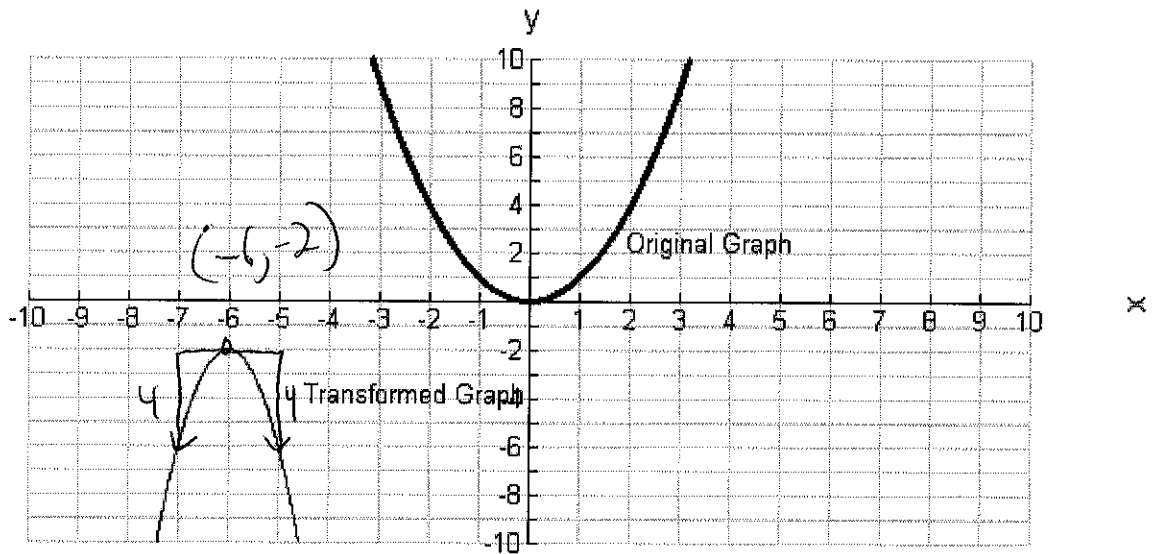
Vertical Stretch:  $\frac{1}{2}$

Reflection... Yes or No NO

Equation:  $2(y-4) = |x-3|$

Mapping Notation:  $(x, y) \rightarrow (x+3, \frac{1}{2}y+4)$

b. (10 marks)



Horizontal shift:  $-6$

Vertical translation:  $-2$

Vertical Stretch:  $4$

Reflection... Yes or No  $yes$

Equation:  $-\frac{1}{4}(y+2) = (x+6)^2$

Mapping Notation  $(x, y) \rightarrow (x-6, -4y-2)$