

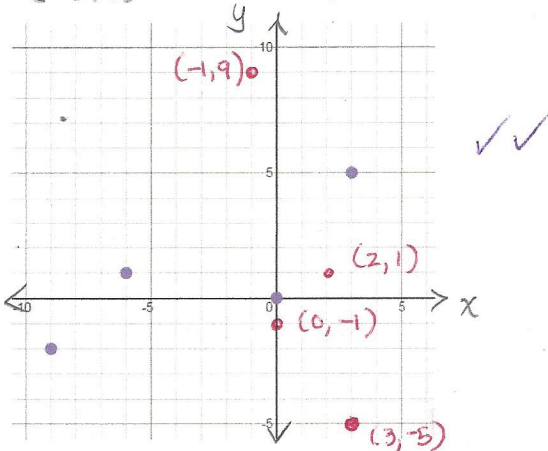
Solutions.

1. Graph the following:

a) Given  $f(x)$ , graph  $2f(-3x)-1$

Annotations:   
 - refl. y-axis   
 - H.C. of 3   
 - V.S. of 2   
 - down 1

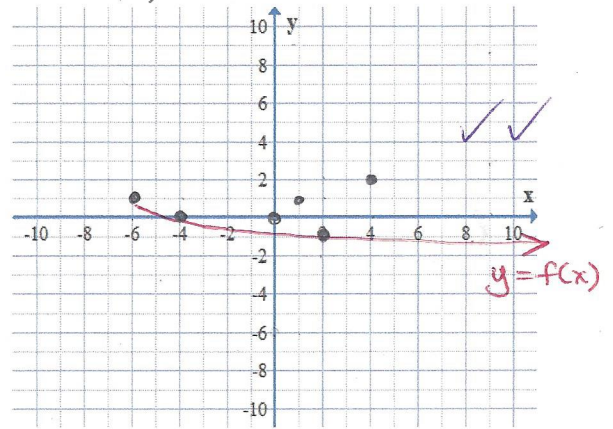
Coordinate mapping:   
 $(x, y) \rightarrow (-\frac{x}{3}, 2y-1)$    
 $(-9, -2) \rightarrow (3, -5)$    
 $(-6, 1) \rightarrow (2, 1)$    
 $(0, 0) \rightarrow (0, -1)$    
 $(3, 5) \rightarrow (-1, 9)$



b)  $f(x) = -\sqrt{\frac{1}{2}x+3}+1$

Annotations:   
 - left 6   
 - up 1   
 - refl. x-axis   
 - H.S. of 2

Coordinate mapping:   
 $f(x) = -\sqrt{\frac{1}{2}(x+6)} + 1$    
 $(x, y) \rightarrow (2x-6, -y+1)$    
 $(0, 0) \rightarrow (-6, 1)$    
 $(1, 1) \rightarrow (-4, 0)$    
 $(4, 2) \rightarrow (2, -1)$



c) Write the equation of the transformed function if  $f(x) = \frac{1}{x}$  and the transformations on  $f(x)$  are  $\frac{-2f(3(x-2))+1}{x}$ .

Annotations:   
 - outside   
 - inside   
 - outside

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

d) Graph the transformed function from part c).

Asymptotes:   
 $x=0 \rightarrow x=2$    
 $y=0 \rightarrow y=1$

Coordinate mapping:   
 $(x, y) \rightarrow (\frac{x}{3}+2, -2y+1)$    
 $(1, 1) \rightarrow (2\frac{1}{3}, -1)$    
 $(-1, -1) \rightarrow (1\frac{2}{3}, 3)$

