

Pre-Calculus  
Section 1.3 [KEY]

For each function, describe the graphical transformation of its mother function. [KEY]

1. vertical stretch of 5  
vertical shift of down 7
2. vertical reflection  
vertical stretch of  $\frac{1}{4}$   
horizontal shift of left 5
3. horizontal shift of left 7
4. horizontal shift of right 4  
vertical shift of down 9
5. vertical reflection  
vertical stretch of 2  
horizontal shift of left 1
6. vertical reflection  
horizontal shift of right 4  
vertical shift of up 5
7. vertical stretch of 5  
vertical shift of up 3
8. vertical reflection  
vertical stretch of  $\frac{2}{3}$   
vertical shift down 9
9. vertical stretch of 2  
horizontal reflection  
vertical shift of up 7
10. vertical reflection  
vertical stretch of 5  
horizontal shift of right 4  
vertical shift of down 8
11. vertical stretch of 9  
horizontal shift of left 5  
vertical shift of down 3
12. vertical reflection  
vertical stretch of 6  
horizontal reflection  
vertical shift of down 11