TRANSLATIONS	For $c > 0$ , the	following translations shift the or	riginal graph $y = f(x)$ as indicated.
Translation	Shift	Example	Graph
y = f(x) + c		$y = x^2 + 2$	
y = f(x) - c		$y = x^2 - 3$	
y = f(x - c)		$y = (x - 4)^2$	
y = f(x + c)		$y = (x + 1)^2$	

Ex: Sketch  $y = \sqrt{x+2} + 3$ 

## Reflections

y = f(-x)

$$y = -f(x)$$

y = |f(x)|

Ex: Sketch  $y = |x^3 + 1|$ 

Ex: Sketch  $y = \frac{-1}{x-1}$ 



Ex: Given the following graph of 
$$y = f(x)$$
, (a).  $y = 2f(x)$ 









(c). y = f(4x)



(d).  $y = f\left(\frac{1}{2}x\right)$ 

