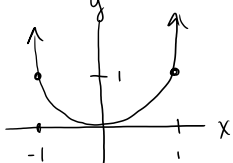
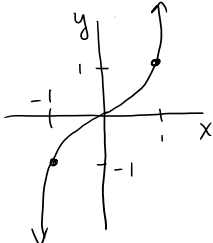
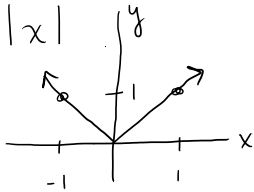


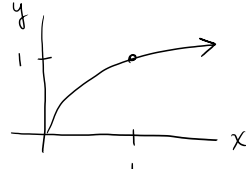
# Graphs you should know so no one laughs at you when you pull out your calculator

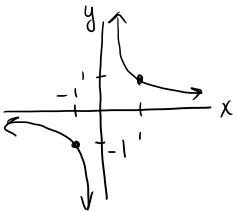
①  $y = mx + b$   
 ↑            ↑  
 slope    y-intercept  
 graph is a line

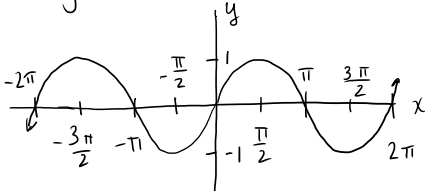
②   
 $y = x^2$   
 ( $y = x^{\text{even}}$  all look similar)

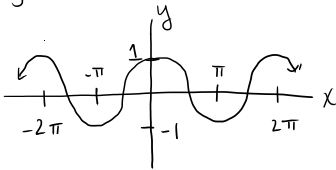
③   
 $y = x^3$   
 ( $y = x^{\text{odd}}$  all look similar)

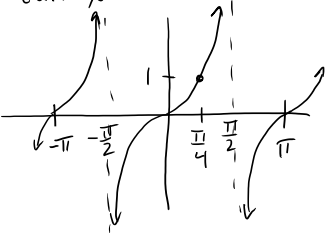
④  $y = |x|$   


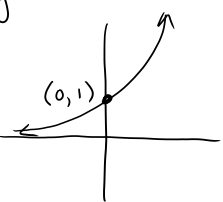
⑤  $y = \sqrt{x}$   
 (other roots look essentially the same)  


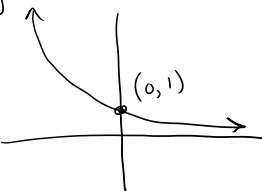
⑥  $y = \frac{1}{x}$   


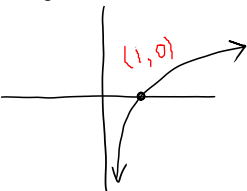
⑦  $y = \sin x$   


⑧  $y = \cos x$   


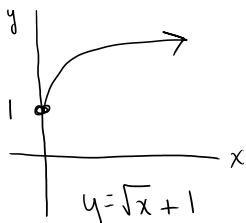
⑨  $y = \tan x$   


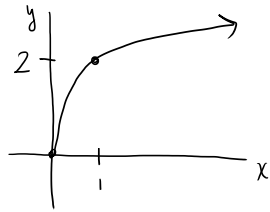
⑩  $y = e^x$  (or  $a^x$  for  $a > 1$ )  


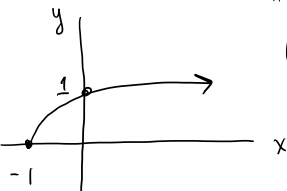
⑪  $y = e^{-x}$  (or  $a^x$  for  $0 < a < 1$ )  


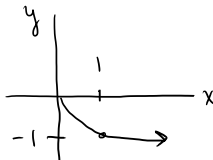
⑫  $y = \ln x$   


## Sample graph transformations:

① Vertical shift - move graph up or down, sign is "correct" (positive moves up, neg. down)  
  
 $y = \sqrt{x} + 1$

② Vertical stretch - multiplies y-coordinates  
  
 $y = 2\sqrt{x}$   
 (Multiply by a number between 0 and 1: vertical compression)

③ Horizontal shift - move graph right or left, sign is "backwards" (positive moves left)  
  
 $y = \sqrt{x+1}$

④ Reflect through x-axis  
 $y = -\sqrt{x}$   


⑤ Reflect through y-axis  
 $y = \sqrt{-x}$   
