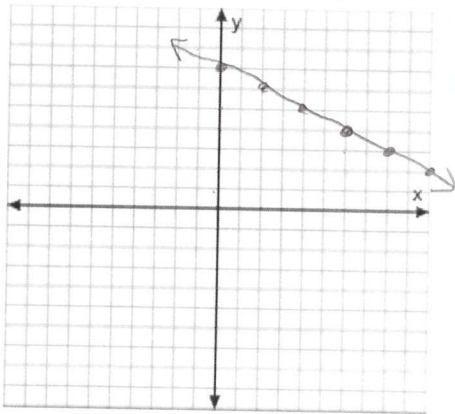
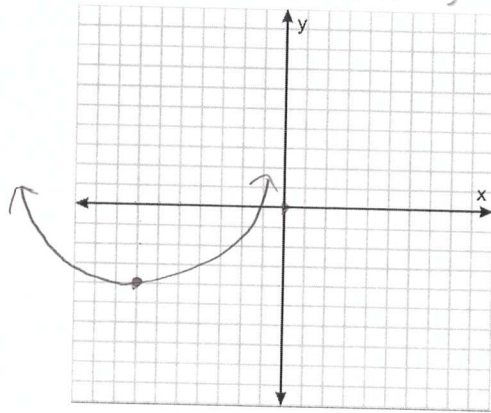


List the transformations and graph each equation.

$y = -\frac{1}{2}(x-6) + 4$   
 $m = -\frac{1}{2} = \frac{\text{down } 1}{\text{right } 2} = \frac{\text{up } 1}{\text{left } 2}$   
 Transformations:  
 right 6 (-h)  
 up 4 (+k)  
 reflection ( $a < 0$ )  
 compression ( $0 < |a| < 1$ )



$y - 2 = \frac{1}{2}(x+7)^2 - 4$   
 $y = \frac{1}{2}(x+7)^2 - 2$   
 Transformations:  
 left 7 (+h)  
 down 2 (-k)  
 no reflection ( $a > 0$ )  
 compression ( $0 < |a| < 1$ )

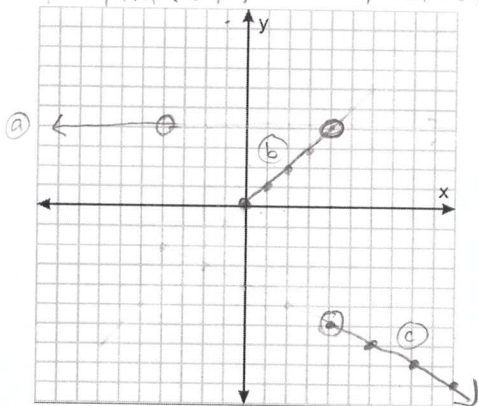


-h : move right +h  
 +h : move left h  
 +k : move up k  
 -k : move down k  
 $a < 0$  : reflect over x-axis  
 $|a| > 1$  : vertical stretch  
 $0 < |a| < 1$  : vertical compression

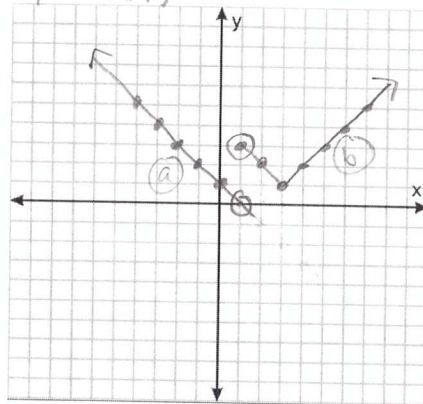
Graph the piecewise functions.

3) closed circle (equal to)      open circles (no equal to)  
 $f(x) = \begin{cases} 4, & x < -4 \\ x, & 0 \leq x < 4 \\ -\frac{1}{2}x - 4, & x > 4 \end{cases}$

a)  $y = \frac{1}{1}x + 0$       b)  $y = -\frac{1}{2}x - 4$   
 $m = \frac{\text{up } 1}{\text{right } 1} = \frac{\text{down } 1}{\text{left } 1}$        $m = -\frac{1}{2} = \frac{\text{down } 1}{\text{right } 2} = \frac{\text{up } 1}{\text{left } 2}$   
 $y\text{-int: } (0, 0)$        $y\text{-int: } (0, -4)$



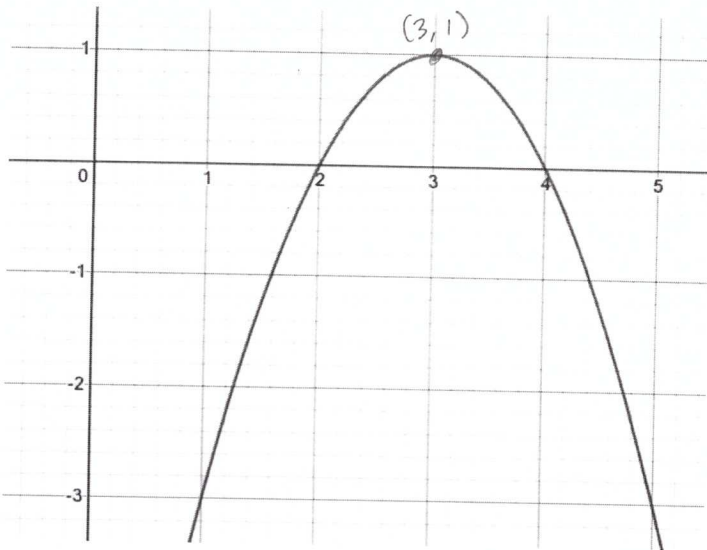
4)  $f(x) = \begin{cases} -x + 1, & x < 1 \\ |x - 3| + 1, & x > 1 \end{cases}$   
 a)  $y = -\frac{1}{1}x + 1$       b) vertex (3, 1)  
 $m = -\frac{1}{1} = \frac{\text{down } 1}{\text{right } 1} = \frac{\text{up } 1}{\text{left } 1}$



a)  $y = 4$   
horizontal

Write the equation for the functions below.

5)



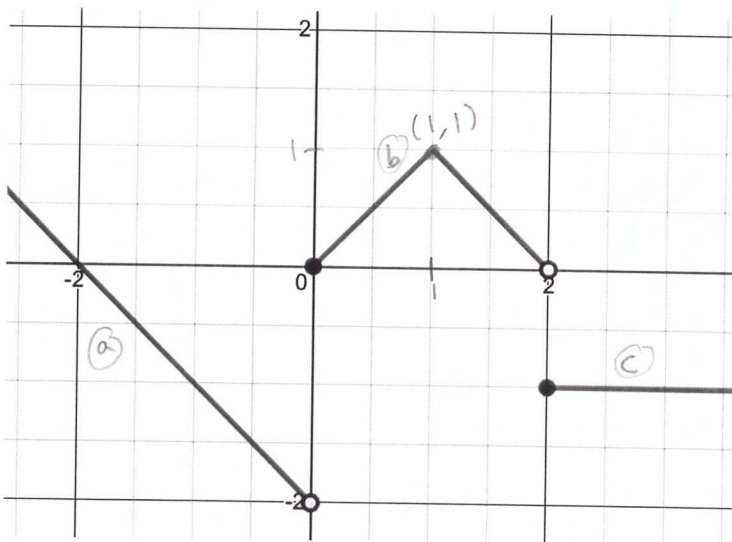
parabola - quadratic  $y = x^2$  parent  
 reflected over x-axis:  $a < 0$   
 no stretch/compression  $|a| = 1$   
 vertex up 1:  $+k = +1$   
 right 3:  $-h = -3$

$$y = -(x-3)^2 + 1$$

or

$$y = -(x-3)^2 + 1$$

6)



a) y-int = (0, -2)  
 $b = -2$   
 $m = \frac{\text{down } 1}{\text{right } 1} = \frac{-1}{1} = -1$   
 open circle  
 $y = -x - 2 \quad x < 0$

b) absolute value V -  $y = |x|$  parent  
 vertex up 1:  $+k = +1$   
 right 1:  $-h = -1$   
 no stretch/compression/reflection:  $a = 1$   
 $y = |x-1| + 1 \quad 0 \leq x < 2$   
 closed open

c) horizontal line  
 $y = -2 \quad x \geq 2$   
 closed

$$f(x) = \begin{cases} -x-2, & x < 0 \\ |x-1|+1, & 0 \leq x < 2 \\ -2, & x \geq 2 \end{cases}$$

\*\*\*\*Sample solutions can be found on graysonmath.com.

