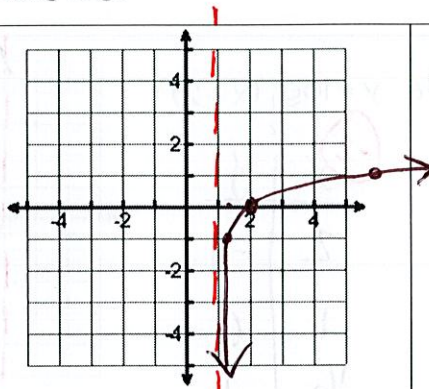


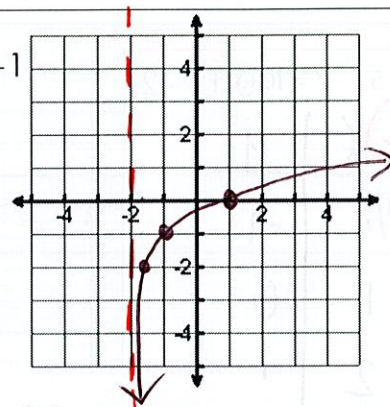
1.  $y = \log_5(x-1)$

$x$	$y$
$\frac{1}{5}$	-1
1	0
5	1

Transformations Right 1State 3 points on Graph (1.2, -1)(2, 0)(6, 1)Domain (1,  $\infty$ ) Range ( $-\infty$ ,  $\infty$ )Asymptote  $x=1$ X-intercept (2, 0) Y-intercept noneIncreasing or Decreasing (1,  $\infty$ )End Behavior  $x \rightarrow \underline{1}, f(x) \rightarrow \underline{-\infty}$   
 $x \rightarrow \underline{\infty}, f(x) \rightarrow \underline{\infty}$ 

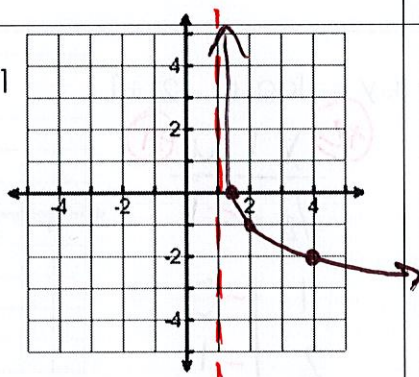
2.  $y = \log_3(x+2) - 1$

$x$	$y$
$\frac{1}{3}$	-1
1	0
3	1

Transformations Left 2, Down 1State 3 points on Graph (-1.67, -2)(-1, -1)(1, 0)Domain (-2,  $\infty$ ) Range ( $-\infty$ ,  $\infty$ )Asymptote  $x=-2$ X-intercept (1, 0) Y-intercept (0,  $\log_3(2) - 1$ )Increasing or Decreasing (-2,  $\infty$ )End Behavior  $x \rightarrow \underline{-2}, f(x) \rightarrow \underline{-\infty}$   
 $x \rightarrow \underline{\infty}, f(x) \rightarrow \underline{\infty}$ 

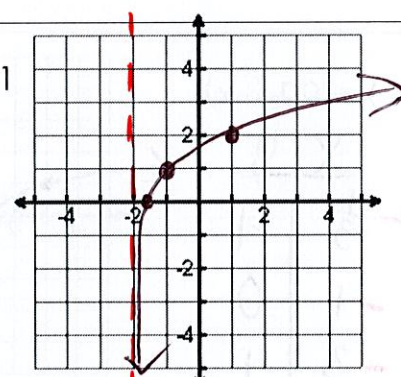
3.  $y = -\log_3(x-1) - 1$

$x$	$y$
$\frac{1}{3}$	+1
1	-0
3	-1

Transformations Reflect x, right 1, down 1State 3 points on Graph (1.3, 0)(2, -1)(4, -2)Domain (1,  $\infty$ ) Range ( $-\infty$ ,  $\infty$ )Asymptote  $x=1$ X-intercept (1.3, 0) Y-intercept noneDecreasing or Increasing (1,  $\infty$ )End Behavior  $x \rightarrow \underline{\infty}, f(x) \rightarrow \underline{-\infty}$   
 $x \rightarrow \underline{1}, f(x) \rightarrow \underline{\infty}$ 

4.  $y = \log_3(x+2) + 1$

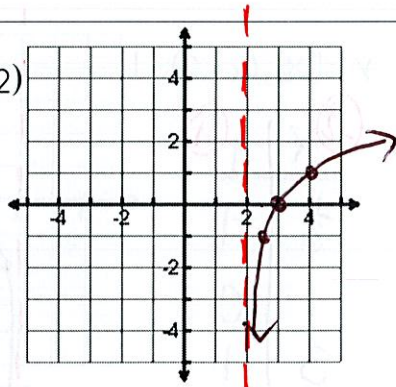
$x$	$y$
$\frac{1}{3}$	-1
1	0
3	1

Transformations Left 2, Up 1State 3 points on Graph (-1.67, 0)(-1, 1)(1, 2)Domain (-2,  $\infty$ ) Range ( $-\infty$ ,  $\infty$ )Asymptote  $x=-2$ X-intercept (-1.67, 0) Y-intercept (0,  $\log_3(2) + 1$ )Increasing or Decreasing (-2,  $\infty$ )End Behavior  $x \rightarrow \underline{-2}, f(x) \rightarrow \underline{-\infty}$   
 $x \rightarrow \underline{\infty}, f(x) \rightarrow \underline{\infty}$



5.  $y = \log_2(x-2)$

$x$	$y$
$\frac{1}{2}$	-1
1	0
2	1



Transformations Right 2

State 3 points on Graph (2.5, -1)(3,0)(4,1)

Domain (2, ∞) Range (-∞, ∞)

Asymptote  $x=2$

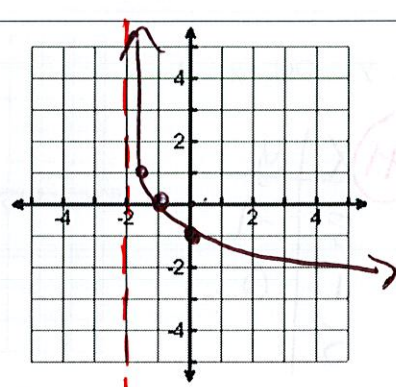
X-intercept (3,0) Y-intercept none

Increasing or Decreasing (2, ∞)

End Behavior  $x \rightarrow \underline{2}, f(x) \rightarrow \underline{-\infty}$   
 $x \rightarrow \underline{\infty}, f(x) \rightarrow \underline{\infty}$

6.  $y = \log_{\frac{1}{2}}(x+2)$

$x$	$y$
2	-1
1	0
$\frac{1}{2}$	1



Transformations Left 2

State 3 points on Graph (0,-1)(-1,0)(-1.5,1)

Domain (-2, ∞) Range (-∞, ∞)

Asymptote  $x=-2$

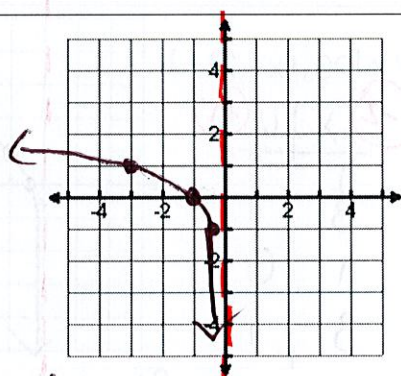
X-intercept (-1,0) Y-intercept (0,-1)

Increasing or Decreasing (-2, ∞)

End Behavior  $x \rightarrow \underline{\infty}, f(x) \rightarrow \underline{-\infty}$   
 $x \rightarrow \underline{-2}, f(x) \rightarrow \underline{\infty}$

7.  $y = \log_3(-x)$

$x$	$y$
$-\frac{1}{3}$	-1
-1	0
-3	1



Transformations Reflect y-axis

State 3 points on Graph (-0.33,-1)(-1,0)(-3,1)

Domain (-∞, 0) Range (-∞, ∞)

Asymptote  $x=0$

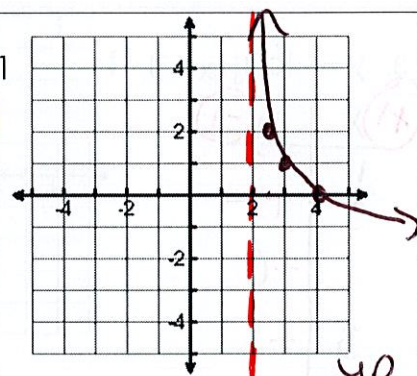
X-intercept (-1,0) Y-intercept none

Increasing or Decreasing (-∞, 0)

End Behavior  $x \rightarrow \underline{0}, f(x) \rightarrow \underline{-\infty}$   
 $x \rightarrow \underline{-\infty}, f(x) \rightarrow \underline{\infty}$

8.  $y = -\log_2(x-2) + 1$

$x$	$y$
$\frac{1}{2}$	≠ 1
1	-0
2	-1



Transformations Reflect x, right 2, down 1

State 3 points on Graph (2.5,2)(3,1)(4,0)

Domain (2, ∞) Range (-∞, ∞)

Asymptote  $x=2$

X-intercept (4,0) Y-intercept none

Increasing or Decreasing (2, ∞)

End Behavior  $x \rightarrow \underline{\infty}, f(x) \rightarrow \underline{-\infty}$   
 $x \rightarrow \underline{2}, f(x) \rightarrow \underline{\infty}$