- Consider the following function:

$$g(x) = \begin{cases} 1, & x < -1 \\ -x, & -1 < x < 1 \\ -1, & x > 1 \end{cases}$$

NOTICE THAT g IS NOT DEFINED WHEN $x = 1$ OR $x = -1$.

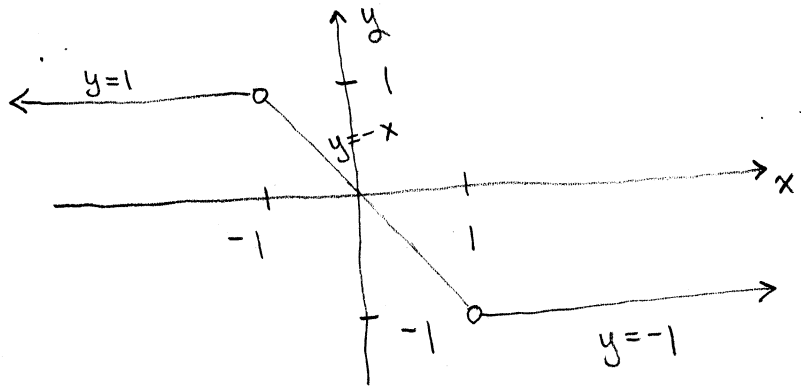
Sketch the graph of g. Determine the domain and range of g.

(1) (2) (3)

(1) For $x < -1$, we graph $y = 1$ (Horiz. line)

For $-1 < x < 1$, we graph $y = -x$ (Slope -1, y-int $(0,0)$)

For $x > 1$, we graph $y = 1$ (Horiz.)



(Open circles at $x = 1, -1$ because g has no values there.)

(2) Domain = Union of domains of the 3 pieces

$$= \underbrace{(-\infty, -1)}_{x < -1} \cup \underbrace{(-1, 1)}_{-1 < x < 1} \cup \underbrace{(1, \infty)}_{x > 1}$$

(3) Range = $[-1, 1]$ (We can see this from the graph.)