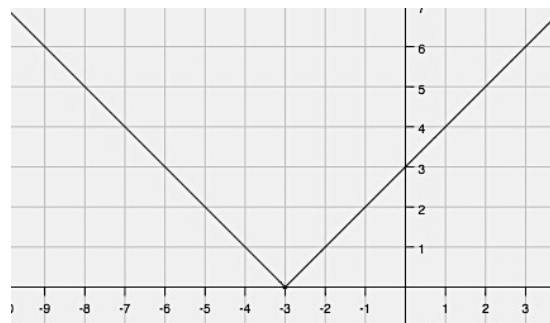


Part III

6. The graph below is another example of an absolute value function. The equation of this function can be written two ways:

as an absolute value function: $f(x) = |x + 3|$

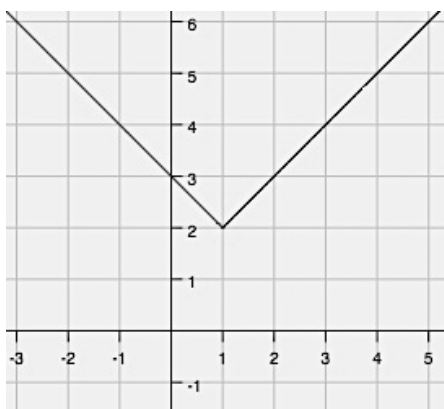
or as a piece-wise: $f(x) = \begin{cases} -(x + 3), & x < -3 \\ (x + 3), & x \geq -3 \end{cases}$



How do these two equations relate to each other?

Below are graphs and equations of more linear absolute value functions. Write the piece-wise function for each. See if you can create a strategy for writing these equations.

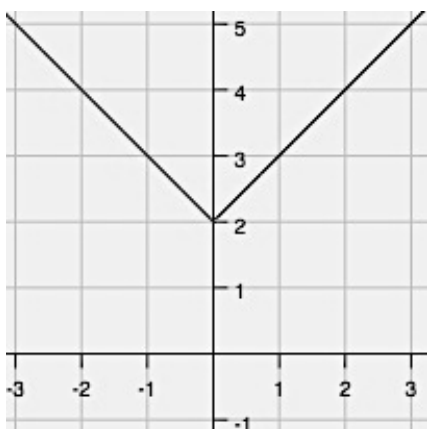
7.



Absolute value: $f(x) = |x - 1| + 2$

Piece-wise: $f(x) =$

8.



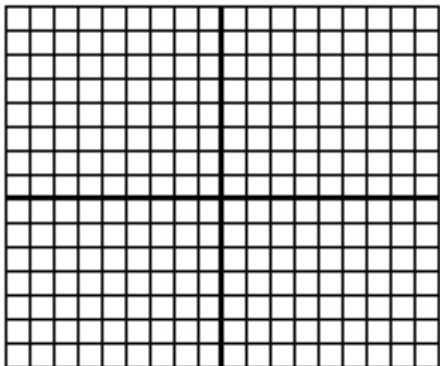
Absolute value: $f(x) = |x| + 2$

Piece-wise: $f(x) =$

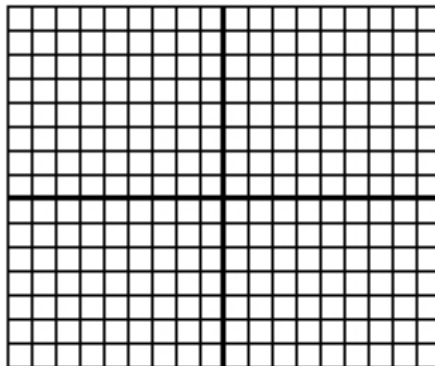


Graph the following linear absolute value piece-wise functions.

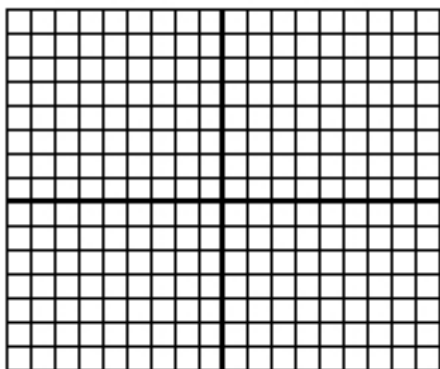
$$9. f(x) = |x - 4| = \begin{cases} -(x - 4), & x < 4 \\ (x - 4), & x \geq 4 \end{cases}$$



$$10. f(x) = |x| + 1 = \begin{cases} -(x) + 1, & x < 0 \\ (x) + 1, & x \geq 0 \end{cases}$$



11.



$$\text{Piece-wise: } f(x) = \begin{cases} -3(x + 2) + 1, & x < -2 \\ 3(x + 2) + 1, & x \geq -2 \end{cases}$$

$$\text{Absolute Value: } f(x) =$$

12. Explain your method for doing the following:

- Writing piecewise linear absolute value functions from a graph.
- Writing piecewise linear absolute value functions from an absolute value function.
- Graphing absolute value functions (from either a piecewise or an absolute value equation).

