

Evaluate the piecewise function for the given values.

$$1. f(x) = \begin{cases} 2x - 3; & x < -2 \\ -\frac{1}{3}x + 1; & x \geq -2 \end{cases}$$

① a. $f(-4) = 2(-4) - 3 = -11$

② b. $f(-2) = \frac{5}{3}$
 $= -\frac{1}{3}(-2) + 1 \rightarrow = \frac{2}{3} + \frac{3}{3}$
 $= \frac{2}{3} + 1 = \frac{5}{3}$

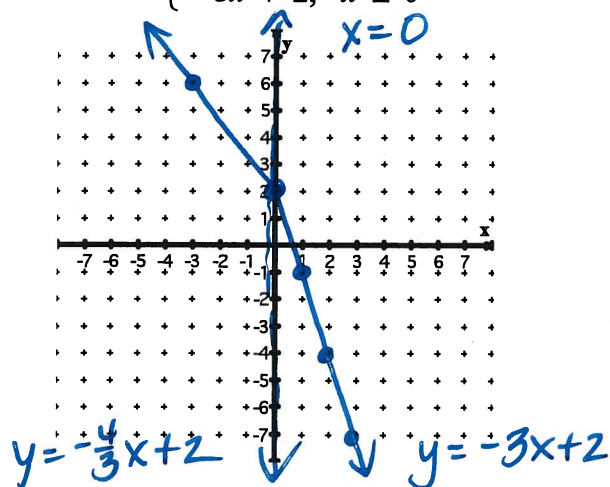
c. $f\left(\frac{1}{2}\right) = \frac{5}{6}$

d. $f(8) = -\frac{5}{3}$
 $= -\frac{1}{3}(8) + 1$
 $= -\frac{8}{3} + \frac{3}{3} = -\frac{5}{3}$

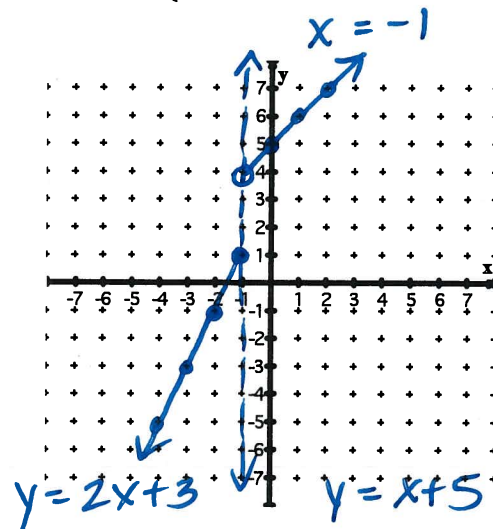
$= -\frac{1}{3}\left(\frac{1}{2}\right) + 1$
 $= -\frac{1}{6} + 1$
 $= -\frac{1}{6} + \frac{6}{6}$
 $= \frac{5}{6}$

Graph the following piecewise functions.

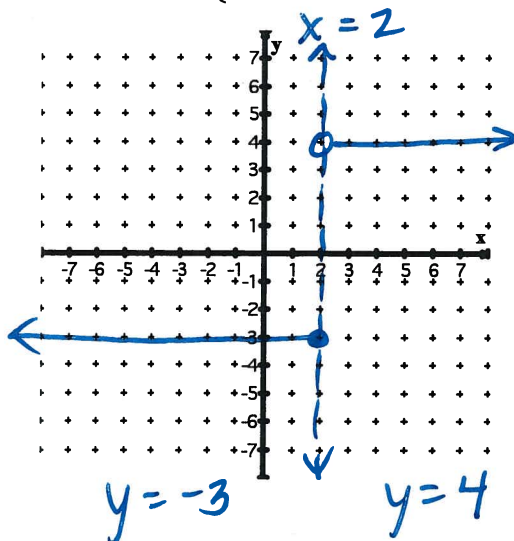
$$2. g(x) = \begin{cases} -\frac{4}{3}x + 2; & x < 0 \\ -3x + 2; & x \geq 0 \end{cases}$$



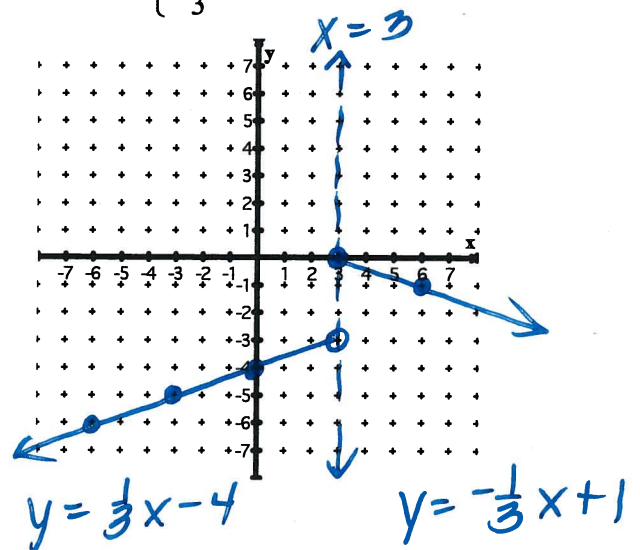
$$3. f(x) = \begin{cases} 2x + 3; & x \leq -1 \\ x + 5; & x > -1 \end{cases}$$



$$3. h(x) = \begin{cases} -3; & x \leq 2 \\ 4; & x > 2 \end{cases}$$

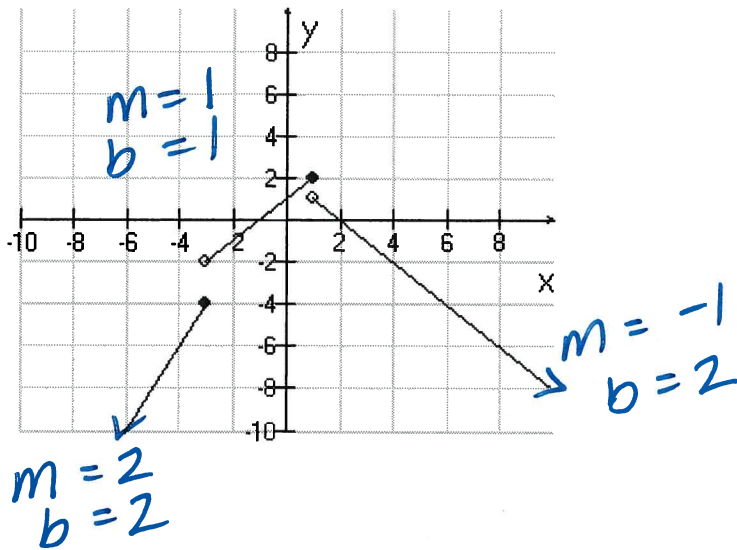


$$4. g(x) = \begin{cases} \frac{1}{3}x - 4; & x < 3 \\ -\frac{1}{3}x + 1; & x \geq 3 \end{cases}$$



CHALLENGES

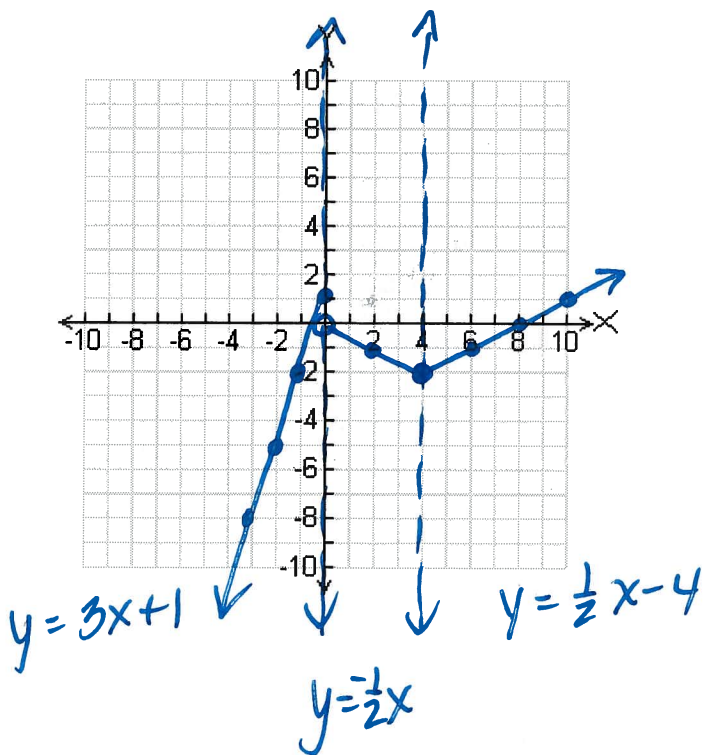
① Determine the function that describes the graph below



$$f(x) = \begin{cases} 2x+2, & x \leq -3 \\ x+1, & -3 < x \leq 1 \\ -x+2, & x > 1 \end{cases}$$

2) Graph the following function.

$$f(x) = \begin{cases} 3x+1 & x \leq 0 \\ -\frac{1}{2}x & 0 < x < 4 \\ \frac{1}{2}x-4 & x \geq 4 \end{cases}$$



3) Graph the following function

$$g(x) = \begin{cases} 2x+2 & 0 \leq x \leq 3 \\ 8 & 3 < x < 6 \\ -2x+20 & 6 \leq x \leq 10 \end{cases}$$

