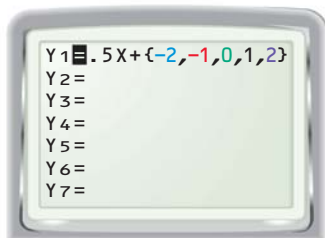


EXAMPLE 2 Find the y -intercept of a line and write an equation

In the same viewing window, display the five lines that have a slope of 0.5 and y -intercepts of -2 , -1 , 0 , 1 , and 2 . Then use the graphs to determine which line passes through the point $(-2, -2)$. Write an equation of the line.

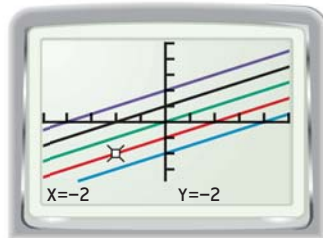
STEP 1 Enter equations

Press $\boxed{Y=}$ and enter the five equations. Because the lines all have the same slope, they constitute a family of lines and can be entered as shown below.



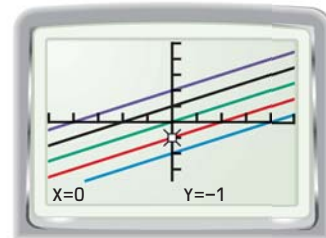
STEP 2 Display graphs

Graph the equations in an appropriate viewing window. Press $\boxed{\text{TRACE}}$ and use the left and right arrow keys to move along one of the lines until $x = -2$. Use the up and down arrow keys to see which line passes through $(-2, -2)$.



STEP 3 Find the line

The line that passes through $(-2, -2)$ is the line with a y -intercept of -1 . So, an equation of the line is $y = 0.5x - 1$.



PRACTICE

Display the lines that have the same slope but different y -intercepts, as given, in the same viewing window. Determine which line passes through the given point. Write an equation of the line.

- Slope: -3 ; y -intercepts: $-2, -1, 0, 1, 2$; point: $(4, -13)$
- Slope: 1.5 ; y -intercepts: $-2, -1, 0, 1, 2$; point: $(-2, -1)$
- Slope: -0.5 ; y -intercepts: $-3, -1.5, 0, 1.5, 3$; point: $(-4, 3.5)$
- Slope: 4 ; y -intercepts: $-3, -1, 0, 1, 3$; point: $(2, 5)$
- Slope: 2 ; y -intercepts: $-6, -3, 0, 3, 6$; point: $(-2, -7)$

DRAW CONCLUSIONS

- Of all the lines having equations of the form $y = 0.5x + b$, which one passes through the point $(2, 2)$? *Explain* how you found your answer.
- Describe* a process you could use to find an equation of a line that has a slope of -0.25 and passes through the point $(8, -2)$.