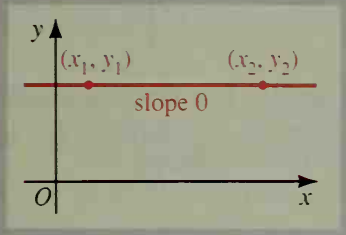
The diagrams below explain why the following are true.

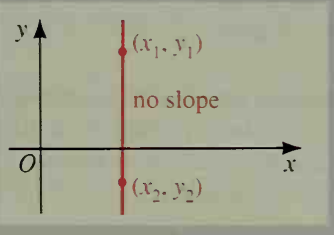
The slope of a horizontal line is zero.



Since $y_1 = y_2$,

$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{0}{x_2 - x_1} = 0.$$

The slope of a vertical line is not defined.



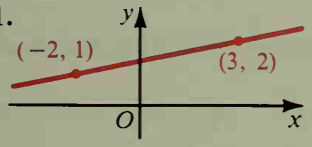
Since $x_1 = x_2$,

$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{y_2 - y_1}{0},$$ which is not defined.

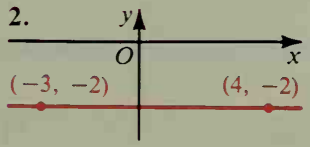
Classroom Exercises

Find the slope of the line.

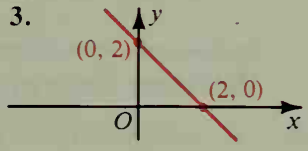
1.



2.



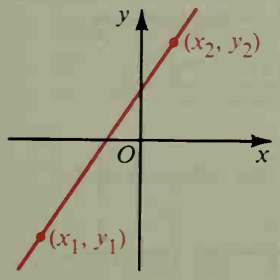
3.



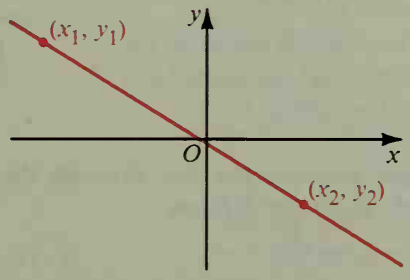
Tell whether each expression is positive or negative for the line shown:

a. $y_2 - y_1$ **b.** $x_2 - x_1$ **c.** $\frac{y_2 - y_1}{x_2 - x_1}$

4.



5.



6. Does the slope of the line appear to be positive, negative, zero, or not defined?

a. **b.** **c.** **d.** _____