Chapter 2.4 Check Your Understanding

Exercises 1–4 True or False. Give reasons.

1. If $f(x) = 2|x| - 3$, then f is a linear function in x.

Answer:

False; the |x| makes f a nonlinear function.

2. The slope of the line $3x - 6y = 2$ is 2.

Answer:

False; the slope is 1/2.

3. The point $(2, -4)$ is on both the lines $2x + y = 0$ and $3x - y = 10$.

Answer:

True; replace x by 2 and y by -4.

4. There is no linear function whose graph contains points in quadrants QI and QIII, but no points in QII or QIV.

Answer:

False; try f(x) = x.

Exercises 5–6 Fill in the blank so that the resulting statement is true.

5. Any line that has negative slope must contain points in Quadrant(s) _____.

Answer:

By drawing a line with negative slope it is easy to see that each one must contain points in QII and QIV.

6. Every line with a positive slope must contain points in Quadrant(s) _____.

Answer:

By drawing a line with positive slope it is easy to see that each one must contain points in QI and QIII.

Exercises 7–10 Use your calculator to draw graphs of the equations on the same screen. The graphs intersect in Quadrant(s) _____ .

7. $3x - 4y = 12$, $4x + 3y = 7$

Answer:

The graphs intersect in QIV.

8. $x - y + 3 = 0, \quad 2x + y + 2 = 0$

Answer:

The graphs intersect in QII.

9. $2x - y - 1 = 0, \quad 1.5x + y = 6, \quad 0.8x + y = 4$

Answer:

The graphs intersect in QI.

10. $1.5x - y + 8.5 = 0, \quad 1.5x + y + 0.5 = 0,$
$0.4x + y + 5 = 0$

Answer:

The graphs intersect in QII, QIII, and QIV.