



Graphing Calculator Investigation

A Preview of Lesson 3-6

Points of Intersection

TI-73

You can use a TI-73 graphing calculator to determine the points of intersection of a transversal and two parallel lines.

Example

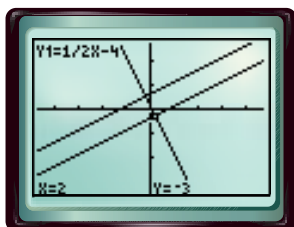
Parallel lines ℓ and m are cut by a transversal t . The equations of ℓ , m , and t are $y = \frac{1}{2}x - 4$, $y = \frac{1}{2}x + 6$, and $y = -2x + 1$, respectively. Use a graphing calculator to determine the points of intersection of t with ℓ and m .

Step 1 Enter the equations in the Y= list and graph in the zoom: integer window.

KEYSTROKES: $\boxed{Y=}$ 1 $\boxed{\div}$ 2 \boxed{x} $\boxed{-}$ 4 \boxed{ENTER} 1 $\boxed{\div}$ 2 \boxed{x} $\boxed{+}$
6 \boxed{ENTER} $\boxed{(-)}$ 2 \boxed{x} $\boxed{+}$ 1 \boxed{ZOOM} 0

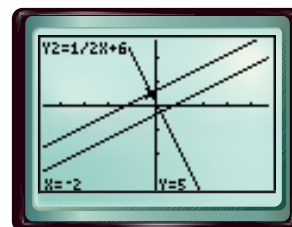
Step 2 Use TRACE to find the points of intersection.

- Find the intersection of ℓ and t .
Press \boxed{TRACE} . Then use the right and left arrow keys to move the cursor to the point where ℓ and t appear to intersect. Use the up and down arrow keys to select Y3 to verify the coordinates.
- Find the intersection of m and t .
Press \boxed{TRACE} \blacktriangledown to select Y2. Use the right and left arrow keys to position the cursor on the point of the intersection. Use the up and down arrow keys to select Y3 to verify the coordinates.



$[-47, 47]$ scl: 10 by $[-35, 27]$ scl: 10

Lines ℓ and t intersect at $(2, -3)$.



$[-47, 47]$ scl: 10 by $[-35, 27]$ scl: 10

Lines m and t intersect at $(-2, 5)$.

Exercises

Parallel lines a and b are cut by a transversal t . Use a graphing calculator to determine the points of intersection of t with a and b . Round to the nearest tenth.

- | | | |
|--|---|---|
| 1. $a: y = 2x - 10$
$b: y = 2x - 2$
$t: y = -\frac{1}{2}x + 4$ | 2. $a: y = -x - 3$
$b: y = -x + 5$
$t: y = x - 6$ | 3. $a: y = 6$
$b: y = 0$
$t: x = -2$ |
| 4. $a: y = -3x + 1$
$b: y = -3x - 3$
$t: y = \frac{1}{3}x + 8$ | 5. $a: y = \frac{4}{5}x - 2$
$b: y = \frac{4}{5}x - 7$
$t: y = -\frac{5}{4}x$ | 6. $a: y = -\frac{1}{6}x + \frac{2}{3}$
$b: y = -\frac{1}{6}x + \frac{5}{12}$
$t: y = 6x + 2$ |

