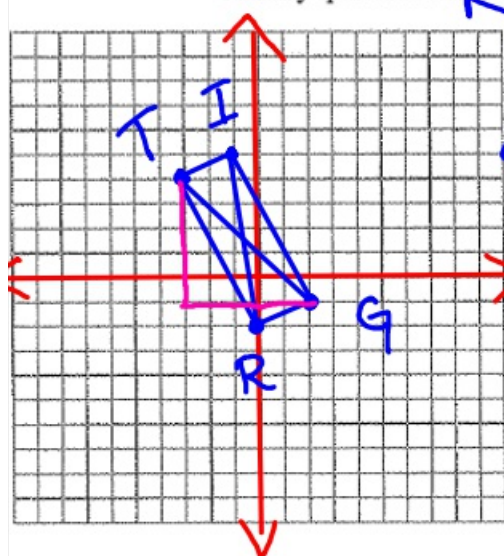


B) A quadrilateral can also be classified by characterizing its diagonals.

You start by calculating the length, slope, and midpoints of each diagonal.

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Classify quadrilateral TIGR, with vertices T(-3, 4), I(-1, 5), G(2, -1), R(0, -2)



Length: x_1, y_1, x_2, y_2
 $(-3, 4), (2, -1)$

TG =

$$d = \sqrt{(2 - (-3))^2 + (-1 - 4)^2}$$

$$TG = 7.1$$

IR =

$$IR = 7.1$$

Midpoint:

$$TG = \left(-\frac{1}{2}, \frac{3}{2}\right)$$

$$(-.5, 1.5)$$

Slope:

TG =

$$\frac{-5}{5} = -1$$

IR =

$$-7$$

$$IR = \left(-\frac{1}{2}, \frac{3}{2}\right)$$

$$\left(-.5, 1.5\right)$$

Conclusions:

$$\overline{TG} \cong \overline{IR}$$

• Diagonals are congruent.

$$\overline{TG} \not\perp \overline{IR}$$

• Diagonals are not $\perp$.

$\overline{TG}$ and $\overline{IR}$ share the same midpoint.

• Diagonals bisect each other.

$$M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$$

~~Parallelogram~~

~~Rhombus~~

~~Square~~

~~trapezoid~~

This quadrilateral is a rectangle because diagonals are congruent, bisect each other, and are not perpendicular.