

3. Plot the points E(-2, 3), F(5, 2), G(3, -2) and H(-3, 0)

a. Find the slope of the lines connecting points E and F.

$$m_1 = -\frac{1}{7}$$

b. Find the slope of the lines connecting points E and H.

$$m_2 = \frac{3}{1} = 3$$

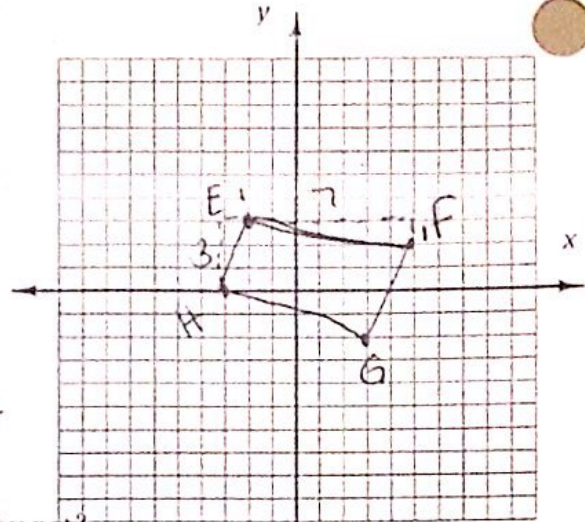
c. Are  $\overline{EF}$  and  $\overline{EH}$  perpendicular? If yes, how do you know?

If not, why not?

No, because  $-\frac{1}{7}$  and 3 are not negative inverses.

d. IS EFGH a rectangle? If yes, how do you know? If not, why not?

No, because rectangles must have  $90^\circ$  angles, which means the lines would be perpendicular.



4. Plot points I(-2, 2), J(1, 3), K(5, 1) and L(-1, -1).

a. Find the slope of the lines connecting points I and J.

$$m_1 = \frac{1}{3}$$

b. Find the slope of the lines connecting points L and K.

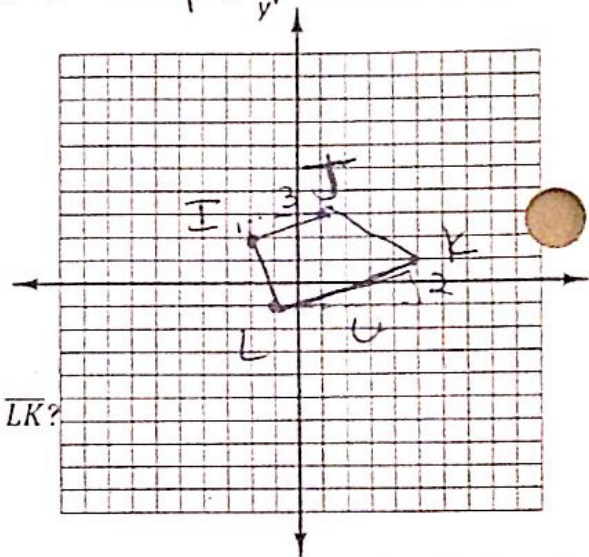
$$m_2 = \frac{2}{6} = \frac{1}{3}$$

c. What is the relationship between line segments  $\overline{IJ}$  and  $\overline{LK}$ ?

They are parallel

d. What type of shape is IJKL? How do you know?

It is a trapezoid, because it has one pair of parallel sides



If lines have the same slope they are parallel. This means they will never intersect.

**Challenge:** Prove the pairs of opposite sides in quadrilateral MNOP are parallel (ie, MNOP is a parallelogram) without knowing the slopes. (Hint: It may be helpful to turn MNOP into two triangles)

