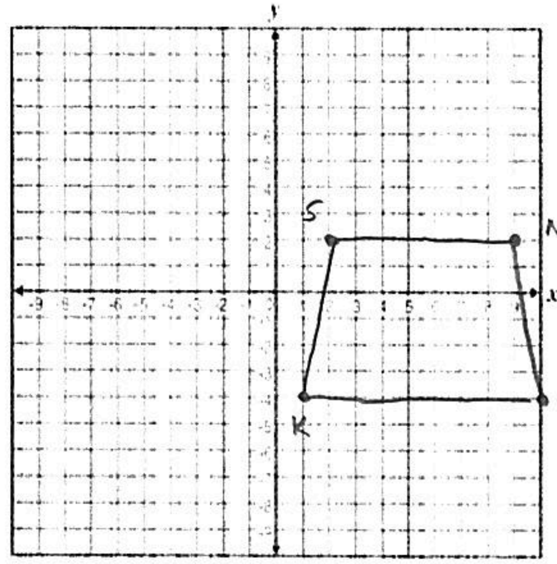
Ah ha! Now you can see that in order to complete coordinate plane proofs with trapezoids, you are going to need to use the slope formula twice and the distance formula twice.

2. The vertices of quadrilateral KINS are K(1,-4), I(10,-4), N(9,2), and S(2,2).

Prove that quadrilateral KINS is an isosceles trapezoid.



slope $SN = \frac{2-2}{2-9} = \frac{0}{-7} = 0$

slope $KI = \frac{-4+4}{10-1} = \frac{0}{9} = 0$

$SN \parallel KI$ b/c they have the same slopes.

KINS is a trapezoid b/c it has at least 1 pair of parallel sides.

$SK = \sqrt{(1-2)^2+(-4-2)^2}$
$= \sqrt{(-1)^2+(-6)^2} = \sqrt{1+36} = \sqrt{37}$

$NI = \sqrt{(10-9)^2+(-4-2)^2}$
$= \sqrt{(1)^2+(-6)^2} = \sqrt{1+36} = \sqrt{37}$

$SK \cong NI$ b/c they are the same length.

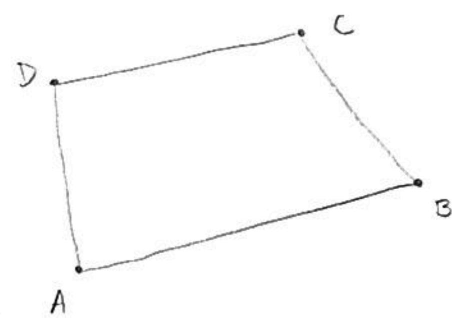
KINS is an isosceles trapezoid b/c it is a trapezoid whose legs are $\cong$.

3. The vertices of quadrilateral ABCD are A(1,-2), B(13,4), C(6,8), and D(-2,4). Prove that quadrilateral ABCD is a trapezoid but not an isosceles trapezoid.

slope $CD = \frac{\Delta y}{\Delta x} = \frac{8-4}{6+2} = \frac{4}{8} = \frac{1}{2}$

slope $AB = \frac{4+2}{13-1} = \frac{6}{12} = \frac{1}{2}$

$CD \parallel AB$ b/c they have the same slope.



ABCD is a trapezoid b/c it has at least 1 pair of $\parallel$ sides.

$AD = \sqrt{(1+2)^2+(-2-4)^2}$
$= \sqrt{(3)^2+(-6)^2} = \sqrt{9+36}$
$= \sqrt{45}$

$BC = \sqrt{(6+2)^2+(8-4)^2}$
$= \sqrt{(8)^2+(4)^2}$
$= \sqrt{64+16} = \sqrt{80}$

$AD \ncong BC$ b/c they are not the same length.

ABCD is not an isosceles trapezoid b/c the legs are not $\cong$.