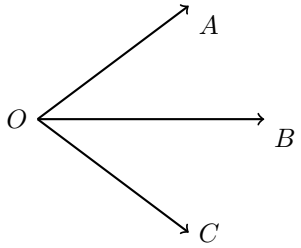
Project 1

Madison Waldinger

October 3, 2019

Introduction

The project that was assigned has two different parts. The first part is asking to find 3 lattice points. A Lattice Point's definition is a point on the coordinate plane whose coordinates are integers. The points that must be found have to be on the same line as the given points, (-5,6) and (8,-6). The second part was to find X and the measure of <AOB and <BOC. The ray OB bisects <AOC so the two angles that have to be found are equal.



Procedure

Part 1.

First, you find the slope of the points (-5,6) and (8,-6). You divide $(Y^1 + Y^2)$ by $(X^1 + X^2)$. You should get the slope $\frac{-12}{13}$. Then, you add the slope to the points (-5,6) and (8,-6). Next you add the slope to one of the sums you just got. This should get you to all your answers;

$$(21, -18), (34, -30), (47, -42)$$

.

Part 2.

First, you put $m\angle AOB$ and $m\angle BOC$ equal to each other because the ray OB bisects <AOC,

$$(7x - 1)^2 = (5x + 8)^2$$

Then, you distribute the square root,

$$(5x + 8)(5x + 8) = (7x - 1)(7x - 1)$$

Then you FOIL your equation. After this you should have,

$$49x^2 - 14x + 1 = 25x^2 + 80x + 64.$$

Then you simplify by adding and subtracting the numbers from both sides of the equation. This should get you,

$$24x^2 = 94x + 63$$

Then you simplify again by using the equation for quadratics.

$$x = \frac{94 \pm \sqrt{-94^2 - 4(24)(-63)}}{2(24)} \quad \text{when} \quad 24x^2 + (-94x) + (-63) = 0$$

This should get you to your values of X,

$$X = -.58, 4.5$$

Then you plug in the X-value into the equations for <AOB and <BOC,

$$(7(4.5) - 1)$$

$$(5(4.5) + 8)$$

$$(7(.58) - 1)$$

$$(5(.58) + 8)$$

This gets you to your answers for <AOB and <BOC.

Results

Part 1.

The 3 lattice points that I got for my answer are

$$(21, -18), (34, -30), (47, -42)$$

.

Part 2.
I got,

$$X = -.58, 4.5$$

For the measurement of <AOB and for measurement of <BOC I only got one answer where both measurements equaled each other, 930.25 but because angles can not be more than 180 degrees to make a this answer is also not correct.

Conclusion

In conclusion I did not get a defiant answer for m<AOB and m<BOC. This was because of certain math rules that had to be followed, such as the angle bisector theorem and acute angles can't be over 89 degrees. This project was challenging. The problems all required a lot of steps and work.

Bibliography

Mr. Booth

Time Statement

6hrs