A seismometer is an instrument that responds to ground motions, such as caused by earthquakes, volcanic eruptions, and explosions. Seismometers are usually combined with a timing device and a recording device to form a seismograph. After an earthquake, you are given seismograph readings from three locations in Virginia. Your job as a scientist is to determine where the epicenter of the earthquake is located.

* Near Tappahannock at A (2,1), the epicenter is 5 units away.
* Near Farmville at B (-2, -2), the epicenter is 6 units away.
* In Near Harrisonburg at C (-6, 4), the epicenter is 4 units away.

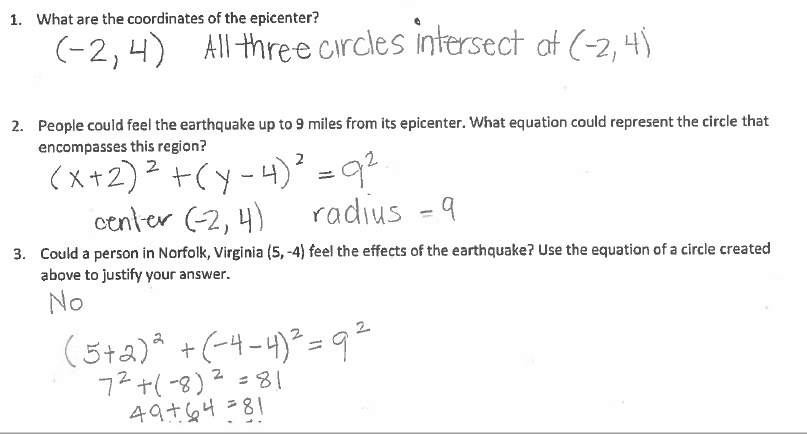
Could a person living in Norfolk, VA feel the effects of the earthquake? Mathematically, justify your answer and provide a labeled diagram which models the problem and shows all variables to which you will refer.

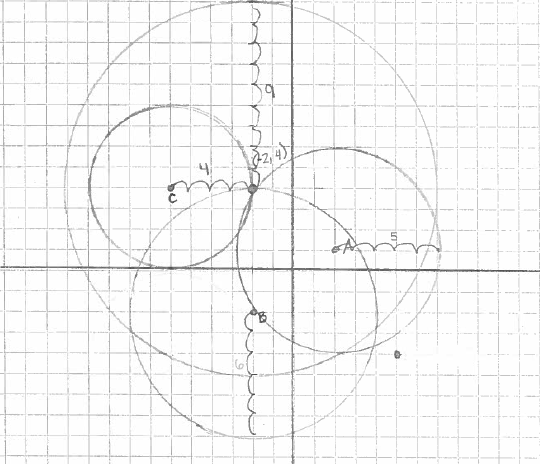


[Desmos calculator link](https://www.desmos.com/calculator/mfupddd8w4)

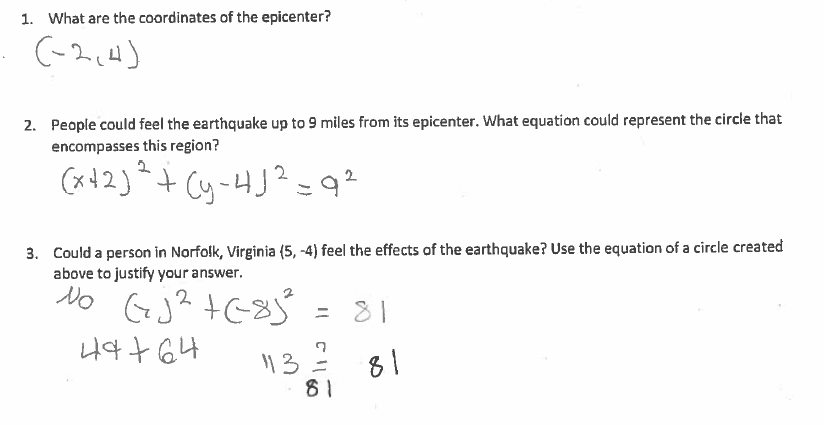
1. What are the coordinates of the epicenter?
2. People could feel the earthquake up to 9 miles from its epicenter. What equation could represent the circle that encompasses this region?
3. Could a person in Norfolk, Virginia (5, -4) feel the effects of the earthquake? Use the equation of a circle created above to justify your answer.

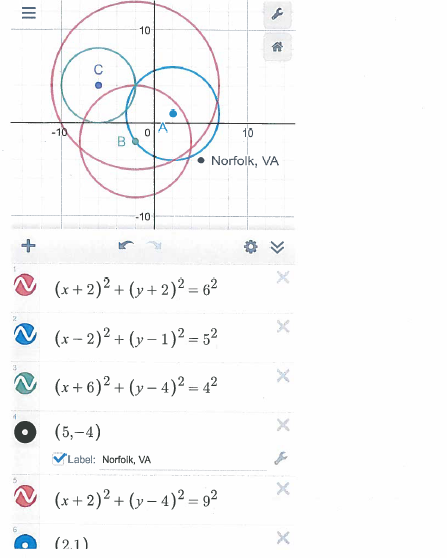
STUDENT A



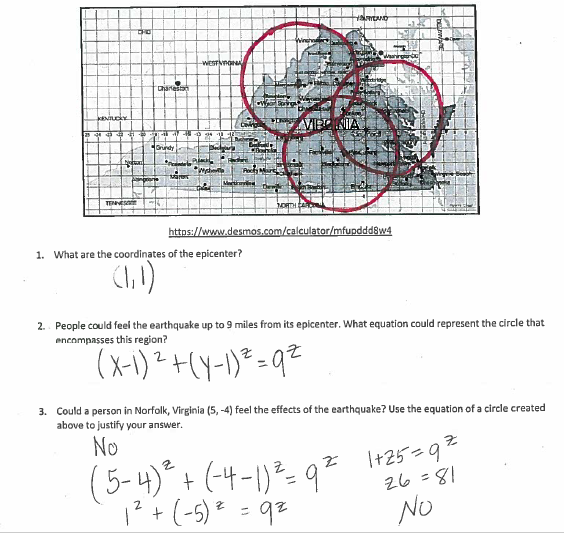


STUDENT B

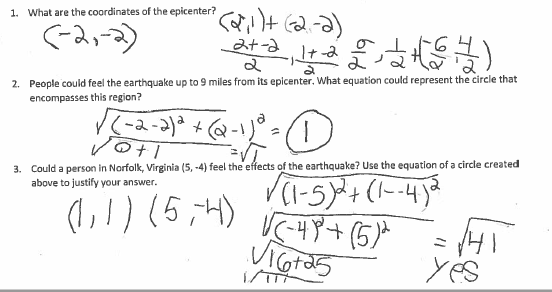




STUDENT C



STUDENT D



STUDENT E

