

Activity 2: The Ranger and the Lion
By Sam Gough

A jungle and wildlife preserve extends 80 miles north and 120 miles east of the ranger station. The ranger leaves from a point 100 miles east of the station along the southern boundary to survey the area. He travels 0.6 miles north and 0.5 miles west every minute. A lion leaves the west edge of the preserve 51 miles north of the station at the same time the ranger leaves the station. Every minute the lion moves 0.1 miles north and 0.3 miles east. Do the lion and the ranger collide?

Part I

1. Write linear equations for the paths traveled by the ranger and the lion.
2. Graph the paths.
3. At what point do their paths cross? Indicate on the sketch of the paths.
4. How far is it from where the ranger starts to where the paths cross?
5. How far is it from where the lion starts to where the paths cross?
6. At what rate is the lion traveling per minute?
7. At what rate is the ranger traveling per minute?
8. The distance found as a function of time can be graphed parametrically. Enter t as $x_3(t)$ and the distance equation as $y_3(t)$. Trace to the point closest to the x -axis. Find the time and the distance that the ranger and the lion are the closest, to the nearest 1 minute interval.