

Parametric Equations #1 - MA111 - Rickert

1 Find a parametric equation for the line $y = 5x + 9$.

2 A particle travels in a straight line, starting at the point $(5, -2)$ at time $t = 0$, and passing through $(8, 5)$ at time $t = 1$. Find a parametric equation for the particle's position as a function of t .

3 Find a parametric equation for the circle of radius 5 centered at the origin.

4 Find a parametric equation for the circle of radius 5 centered at the point $(-3, 8)$.

5 Planet A orbits a star in a circular orbit centered at the star at a distance of 40, and with period 3. Determine a parametric equation for the orbit of planet A.

6 Moon M orbits planet A in a circular orbit centered at the center of planet A at a distance of 2, and with a period of $1/9$. Determine a parametric equation for the orbit of moon M.

7 Planet B orbits the same star as planet A, except that planet B is at a distance of 24, and with period 1.536. Determine a parametric equation for the orbit of planet B.

8 Determine the distance between planets A and B as a function of time. Plot a graph of this function.

9 Inspect the graph representing the distance between planets A and B to determine when the planets are closest to each other. There are multiple answers to this. Describe as many of them as possible.