

Parametric Equations #1 - MA111 - Rickert

- 1** Find a parametric equation for the line $y = 7x + 6$.
- 2** A particle travels in a straight line, starting at the point $(-3, 2)$ at time $t = 0$, and passing through $(5, 7)$ 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 $(-7, 14)$.
- 5** Planet A orbits a star in a circular orbit centered at the star at a distance of 80 and with period 9. 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 7 from planet A and with a period of $1/4$. Determine a parametric equation for the orbit of the moon M relative to the central star.
- 7** Planet B orbits the same star as planet A, except that planet B orbits the star at a distance of 50 and with a period of 4.447. Determine a parametric equation for the orbit of planet B relative to the central star.
- 8** Determine the distance between planets A and B as a function of time. (If you wish, you may use the assumption that the distance is equal to 130 when $t = 2.197617$.) Plot a graph of this distance function.
- 9** Inspect the graph representing the distance between planets A and B to determine when the planets are furthest from each other. There are multiple answers to this. Describe as many of these as possible.