

## A Fly's Path (A discovery based activity for parametric equations)

**Directions:** For the following write two functions, one which returns the  $x$ -coordinate and the other returns the  $y$ -coordinate for the location of a *fly* at time  $t$ .

**Problem 1.** A fly starts at  $(0,0)$  at time=0, and ends at  $(3,2)$  at time=1. The fly is flying in a straight line.

**Problem 2.** A fly starts at  $(-2,3)$  at time=0, and ends at  $(1,7)$  at time=1. The fly is flying in a straight line.

**Problem 3.** A fly starts at  $(3,2)$  at time=0, and ends at  $(0,0)$  at time=1. The fly is flying in a straight line.

**Problem 4.** A fly starts at  $(-2,5)$  at time=0, and ends at  $(3,10)$  at time=1. The fly is flying on a parabolic path.

**Problem 5.** A fly starts at  $(3,9)$  at time=0, and ends at  $(-2,4)$  at time=1. The fly is flying on a parabolic path.

**Problem 6.** A fly starts at  $(1,5)$  at time=0, and ends at  $(\frac{-\sqrt{2}}{2}, \frac{-\sqrt{2}}{2})$  at time=1. The fly is flying counter clockwise on a circular path.

**Problem 7.** A fly starts at  $(-2,0)$  at time=0, and ends at  $(2,0)$  at time=1. The fly is flying clockwise on a circular path.