4. [7 points] The position of a particle in the plane is given by a pair of parametric equations $x = x(t)$ and $y = y(t)$ where x and y are measured in meters and t is measured in seconds. The functions $x(t)$ and $y(t)$ satisfy the differential equations

$$\frac{dx}{dt} = p(x) \qquad \text{and} \qquad \frac{dy}{dt} = h(t)$$

for functions $p(x)$ and $h(t)$. Some values of the functions p and h are provided in the tables below.

x	0	1	2	3	4	5
$p(x)$	1	4	6	-2	0	3

t	0	0.5	1	1.5	2
$h(t)$	2	-4	1	0	3

a. [4 points] Suppose that $x(0) = 3$ and $y(0) = 2$. Use Euler's method with $\Delta t = 0.5$ to approximate the values of $x(1)$ and $y(1)$. Show your calculation for each step of Euler's method.

Answer: $x(1) \approx$ _____

$y(1) \approx$ _____

b. [3 points] Suppose that $x(2) = 1$ and $y(2) = 5$. How fast is the particle moving when $t = 2$?