

Homework Solutions

Section 9.4a
(357) 8,9

8) Set up Table

t	x	y	$\frac{dx}{dt}$	$\frac{dy}{dt}$	Δt	Δx	Δy
Initial conditions			given		↑ you choose the step size	$\approx \frac{dx}{dt} \Delta t$ $\approx \frac{dy}{dt} \Delta t$	
			$x' = x + 2y$ $y' = 4x + 3y$				

t	x	y	$\frac{dx}{dt}$	$\frac{dy}{dt}$	Δt	Δx	Δy
0	1	1	3	7	.1	.3	.7
.1	1.3	1.7	4.7	10.3	.1	.47	1.03
.2	1.77	2.73					

\Rightarrow $x(.2) \approx 1.77, y(.2) \approx 2.73$

9)

t	x	y	$\frac{dx}{dt}$	$\frac{dy}{dt}$	Δt	Δx	Δy
0	-3	5	-5	-3	.1	-.5	-.3
.1	-3.5	4.7	-4.6	-3.6	.1	-.46	-.36
.2	-3.96	4.34					

$x(.2) = -3.96, y(.2) \approx 4.34$