

# Announcement for the 3rd Edition of the ACTEX Manual for Exam ALTAM

(Last updated 04/08/2025) sorted by page

Page 15 **Example 0.10.** Change the solution to:

We construct the following table:

$t$	$x$	$y$	$\frac{dx}{dt}$	$\frac{dy}{dt}$
1.0	1.00000	-1.00000	0.00000	0.00000
0.9	1.00000	-1.00000	-0.10000	0.10000
0.8	1.01000	-1.01000	-0.22010	0.20200
0.7	1.03201	-1.03020	-0.36318	0.31087
0.6	1.06833	-1.06129	-0.53380	0.43156
0.5	1.12171	-1.10444	-0.73886	0.56949

$$\text{For example, at } t = 1, \begin{cases} \frac{dx}{dt} = xy + t = 1(-1) + 1 = 0 \\ \frac{dy}{dt} = ty + x = 1(-1) + 1 = 0 \end{cases}, \text{ and hence}$$

$$\begin{cases} x(0.9) \approx 1 + 0(-0.1) = 1 \\ y(0.9) \approx -1 + 0(-0.1) = -1 \end{cases}.$$

$$\text{At } t = 0.9, \begin{cases} \frac{dx}{dt} = xy + t = 1(-1) + 0.9 = -0.1 \\ \frac{dy}{dt} = ty + x = 0.9(-1) + 1 = 0.1 \end{cases}, \text{ and hence}$$

$$\begin{cases} x(0.8) \approx 1 + (-0.1)(-0.1) = 1.01 \\ y(0.8) \approx -1 + (0.1)(-0.1) = -1.01 \end{cases}.$$

So the approximates are 1.12171 and -1.10444.