MA 266 Lecture 5

Section 2.2 Separable Equations (contd)

Example 1. *Consider the initial value problem*

$$y' = ty(4-y)/3, \quad y(0) = y_0 > 0.$$

(a).Determine how the behavior of the solution as t increases depends on the initial value y_0.
(b).Suppose that $y_0 = 0.5$. Find the time T at which the solution first reaches the value 3.98.

Homogeneous Equation

Consider the differential equation $\frac{dy}{dx} = f(x, y)$. If the right hand side

then the equation is said to be _____. Such equation can be transformed into _____ by a change of variable.

Example 2. *Solve the differential equation*

$$\frac{dy}{dx} = \frac{y - 4x}{x - y}.$$