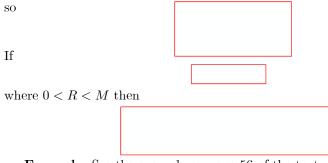
Notes on Section 2.4.6 The Logistic Equation

Philip W. Walker

The differential equation
(1)
where each of k and M is a positive number is known as the
and
Equation (1) is equivalent to
which is a Bernoulli differential equation. It is also equivalent to
(2)
which is separable. We will find the solutions to (1) by solving (2). Using partial fractions
on the left side of (2) we have
-+ C
In the applications of interest it will be the case that $0 < y(t) < M$ so
SO
Exponentiating and noting that the additive constant becomes a multiplicative one,



Example. See the example on page 56 of the text.

Suggested Problems. Problems 1,3, and 5 in Exercises 2.4.6 on pages 56 and 57 of the text.