

Problem 3

Consider the differential equation

$$dy/dt = -ay + b,$$

where a and b are positive numbers.

- (a) Find the general solution of the differential equation.
- (b) Sketch the solution for several different initial conditions.
- (c) Describe how the solutions change under each of the following conditions:
 - i. a increases.
 - ii. b increases.
 - iii. Both a and b increase, but the ratio b/a remains the same.