$P(0) = 0.01 \qquad b = 0.02 \quad d = 0.015 \quad \pi = 0.1$

$t_0 = 0 \qquad T = 50$

$$\frac{dp}{dt} = 0.1 \cdot 0.02 (1-p) \rightarrow \frac{dp}{dt} = 0.002(1-p)$$

$$\frac{dp}{(1-p)} = dt \cdot 0.002 \qquad \int_{0.01}^{p} (1-p)^{-1} dp \quad dp = \int_{0}^{50} dt \cdot 0.002$$

$$-\log(1-p)\Big|_{0.01}^{p} = 0.002 \cdot 50 \quad \Rightarrow -\log(1-p) = 0.110650\ldots$$

$$\log(1-p) = -0.110\ldots \qquad P = 0.104210956144$$