Mathematics 172

Quiz 10 **Name:** Key

You must show your work to get full credit.

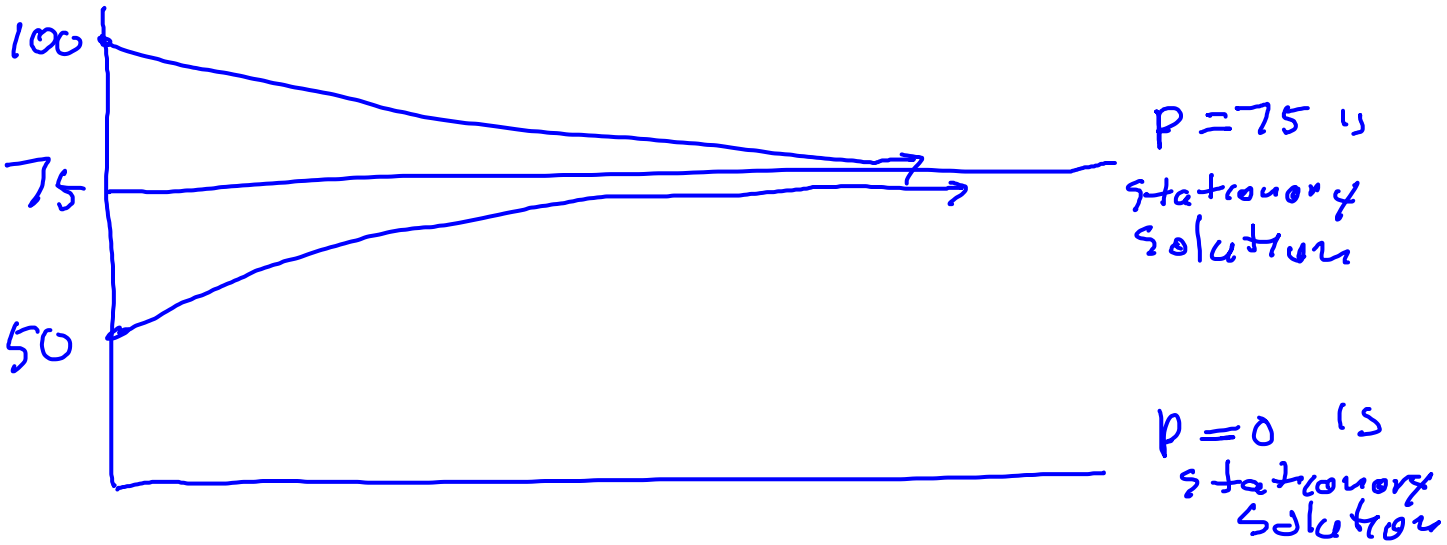
1. Write the logistic equation for $P(t)$ with carrying capacity $K = 75$ and intrinsic growth rate $r = .13$. *Remark:* The logistic equation is a differential equation and there there should be a derivative in it. Also it is an equation so if there is no equal sign in it, then it is wrong.

The equation is $P' = .13P\left(1 - \frac{P}{75}\right)$

Logistic Equation

$P' = rP\left(1 - \frac{P}{K}\right)$

2. Make a graph with time t on the x-axis and P on the y axis showing the stationary solution to your answer to part (a) and also the solutions with $P(0) = 50$ and the solution with $P(0) = 100$.



3. For the solution with $P(0) = 50$ estimate $P(132)$.

$P(132) \approx$ 75

Starting at $P(0) = 50$ the solution has $P = 75$ as asymptote so $P(132) \simeq 75$