Mathematics 172

Quiz 30 Name: Key

You must show your work to get full credit.

We consider the SIR system

$$S' = -bSI$$
$$I' = bSI - kI$$
$$R' = kI$$

Also give resulting number $c = \frac{k}{b}$

with

$$S_0 = 999, \quad I_0 = 1.$$

1. If $b = .001$ and $k = .2$ find

$I_{\max} =$ 541.86 Day max occurs 13 $c = 200$

2. If $b = .001$ and $k = .1$ find

$I_{\max} =$ 732.52 Day max occurs 13 $c = 100$

3. If $b = .001$ and $k = .4$ find

$I_{\max} =$ 265.08 Day max occurs 15 $c = 400$

4. If $b = .002$ and $k = .2$ find

$I_{\max} =$ 782.78 Day max occurs 8 $c = 100$

5. If $b = .0005$ and $k = .2$ find

$I_{\max} =$ 249.95 Day max occurs 27 $c = 400$