Practical 05 – Activity 05

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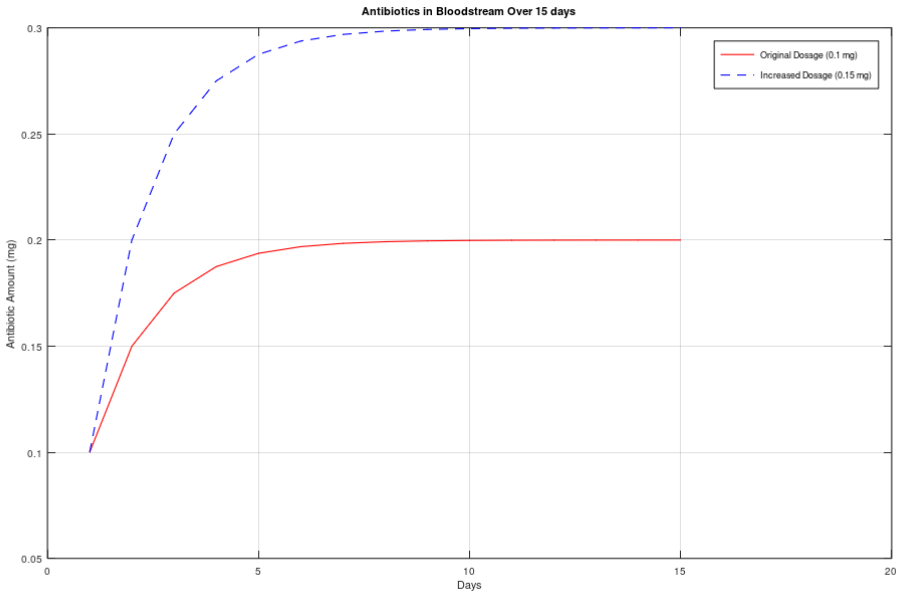

Octave code

```
1  #Activity 05
2
3  clear all; close all; clc;
4
5  a0 = 0.1;
6  days = 15; % Number of days
7  initial_dosage = 0.1; % Initial daily dosage in mg
8  increased_dosage = 0.15; % Increased daily dosage in mg
9
10 % Calculate the amount of antibiotics over time with the initial dosage and for the increased dosage
11 for i = 1:days
12     antibiotic_amount(i) = a0 * (0.5)^(i-1) + initial_dosage * (1 - (0.5)^(i-1)) / (1 - 0.5);
13     antibiotic_amount_increased(i) = a0 * (0.5)^(i-1) + increased_dosage * (1 - (0.5)^(i-1)) / (1 - 0.5);
14
15 end
16
17 % Plot the graph
18 figure;
19 plot(1:days, antibiotic_amount, 'r-');
20 hold on;
21 plot(1:days, antibiotic_amount_increased, 'b--');
22 title('Antibiotics in Bloodstream Over 15 days');
23 xlabel('Days');
24 ylabel('Antibiotic Amount (mg)');
25 legend('Original Dosage (0.1 mg)', 'Increased Dosage (0.15 mg)');
26 grid on;
27
28
29 % Determine the time it takes to achieve a constant level with increased dosage from the graph
30 # approximately 10 days according to the graph
31
```

The time it takes to achieve a constant level with increased dosage from the graph
Approximately 10 days according to the graph