Mathematics 172

Quiz 14 Name: Key.

You must show your work to get full credit.

Let $A(t)$ be the number of grams of algae after t days in a bucket left out in the sum. Assume that

$$\frac{dA}{dt} = .12A\left(1 - \frac{A}{135}\right).$$

1. If $A(7) = 150$ then what is $A'(7)$? $A'(7) =$ -2

$A'(7) = .12\,A(7)\left(1 - \frac{A(7)}{135}\right)$

$= .12\,(150)\left(1 - \frac{150}{135}\right)$

$= -2$

2. If $A(7) = 150$ then estimate the following:

$A(7.5) \approx$ 149.

In these problems we use the approximation

$A(x) \approx A(7) + A'(7)(x-7)$

$= 150 - 2(x-7)$

$A(7.1) \approx$ 149.8

So $A(7.5) \approx 150 - 2(7.5-7)$

$= 149$

$A(6.8) \approx$ 150.4

$A(7.1) \approx A(7) + A'(7)(7.1-7)$

$= 150 - 2(7.1-7)$

$= 149.8$

$A(6.8) \approx A(7) + A'(7)(6.8-7)$

$= 150 - 2(6.8-7)$

$= 150.4$