Section 3.2

4. The amount of salt in the tank at time $t$ equals

$$x(t) = -20,000,000 \frac{1}{(100 + t)^3} + 20 + \frac{t}{5}$$

The concentration of salt at time $t$ is equal to $\frac{x(t)}{100 + t}$. We have to solve the equation

$$\frac{x(t)}{100 + t} = .1,$$

which gives $t = 18.92$. (In this final step a computer or calculator might be helpful).

14. The alligator population in 2010 is estimated to be

$$p(40) = 187,500,$$

where

$$p(t) = 300e^{-\ln(5)t}.$$