1. $P(t) = (t+10)^2$

2. $P(t) = (t+4)^2$

3. $P(t) = 10\sqrt[3]{\frac{7}{3}t+1}$

4. $C(t) = \frac{1}{100{,}000}\left(1-e^{t}\right)$ g/gal

5. $A(t) = \frac{10t+200{,}000}{t+100}$ g

6. Sorry, this was an unfair question. It required knowledge of solving a system of differential equations. I will leave this for Math 33.

7. i) $T(t) = T_m + Ae^{kt}$

   ii) $T(t) = 85 + 165e^{\frac{t}{8}\ln\frac{9}{11}}$ and $t = \frac{8\ln\frac{19}{33}}{\ln\frac{9}{11}}$ minutes when $T = 180°$

8. Change the question to: How long will it take for the population to reach 700?

   $P(t) = \frac{LP_0}{P_0 + (L-P_0)e^{-Lkt}}$ where $L = \frac{8000}{7}$ and $k = \frac{7}{80{,}000}\ln 9$ and $P(t) = 700$ when $t \approx 3.1$ yrs.

More to come as I find the time.