(1) Solve these differential equations.
   (a) $y' = 6y$
   
   (b) $y' + y = 0$
   
   (c) $y' = -0.2y + 1$
   
   (d) $y' = x^2 y$.
   
   (e) $y' = xy^2$.
   
   (f) $y' = (3x^2 + 1)y$
   
   (g) $y' = 2^x y^2$
   
   (h) $y' = y^2 - 1$
   
   (i) $y' = (\sin \frac{1}{x})y$.

(2) Solve
   (a) $y' = -y$, $y(0) = 4$
   
   (b) $y' = xy$, $y(0) = 9$,

(3) The late Mac the Knife is found at midnight with a body temperature of 90 degrees F, in a room where the temperature is 70. At 1 a.m. he has cooled to 80 degrees. When was he killed? Why?