Week 7
MATH 34B
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8. Find the general solution of the equation $y' = 3(1 - y)$.

10. Find the solution of the equation $h = 0.4(4 - h)$ with initial condition $h(0) = 1$.

13. Solve the equation $y = 15 - 6y$ with initial condition $y(0) = 0$.

How quickly was the total income of the entire population rising in 1997?

18. A cup of coffee was made at a temperature of $90°C$ and cools according to Newton's law of cooling. The room temperature is $30°C$. If the temperature of the coffee 20 minutes after being made was $40°C$.

    (a) What was the temperature of the coffee 5 minutes after being made?

    (b) When was the temperature of the coffee $75°C$?

21. Find the partial solutions to the DE $\frac{dy}{dx} = (x-2)e^{-2y}$ satisfying $y(2) = \ln(2)$.

25. Find the equation for the curve satisfying $\frac{dy}{dx} = 90yx^{17}$ where the y-intercept is 6.

27. Suppose $Q = Ce^{kt}$, and Q satisfies $\frac{dQ}{dt} = -0.05Q$. What does this tell you about k and C?

29. Given $\frac{dy}{dt} = 100 - y$, find y when

   (a) $y(0) = 35$
   (b) $y(0) = 135$.