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Discussion 3  
Week of September 15 - September 21, 2005

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**Topics** Difference equations, Fourier series, frequency responses.

**Problem 1** (*Difference equations.*)

Consider the difference equation

$$y[n] - y[n-1] - y[n-2] = 0.$$

with initial conditions  $y[0] = 0$  and  $y[1] = 1$ . (In other words  $x[n] = 0$  for all  $n$ .)

(a) Solve for  $y[n]$  recursively.

(b) Solve for  $y[n]$  as the sum of a homogeneous solution and a particular solution.

**Problem 2** (*Continuous-time Fourier series.*)

OWN 3.22 (a), for figure (a) only.

**Problem 3** (*Frequency response.*)

OWN 3.34 (a)

**Problem 4** (*Continuous-time Fourier series.*)

OWN 3.44

**Problem 5** (*Discrete-time Fourier series.*)

OWN 3.30