

## MATH 286 PROBLEMS DUE MARCH 21, 2001

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1. Express  $\cos(3t) + \sin(4t)$  as a product of trigonometric functions.
2. A spring is stretched 1 m by a mass of 1 kg. The damping constant is  $\gamma = \frac{1}{2}$  kg/s.
  - (a) Find the frequency in Hz of external vibration which will produce maximum amplitude.
  - (b) Find the maximum amplitude if the external force is  $F_0 = 2$  N.

3. Calculate:

$$\det \begin{pmatrix} 1 & 1 & -1 & -1 \\ 1 & 2 & 0 & 1 \\ 0 & 1 & 1 & 0 \\ 1 & 0 & 3 & 1 \end{pmatrix}.$$

4. Calculate:

$$\det \begin{pmatrix} 1 & 3 & 4 & 0 \\ 2 & -1 & 1 & 1 \\ 1 & 1 & 2 & 1 \\ 0 & 1 & 1 & 1 \end{pmatrix}.$$