# MATH 2243: LINEAR ALGEBRA AND DIFFERENTIAL EQUATIONS
# ANSWERS TO SAMPLE FINAL FROM SPRING 2005

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**Problem 7.**
$$T(20) = 310/7 \approx 44.3°\text{F}.$$

**Problem 8.**
$$y(x) = (15e^{-x} + e^{-9x})/8$$

**Problem 9.** Not covered by our syllabus.

**Problem 10.**

$$\lambda_1 = 1, \qquad \lambda_2 = 1 - 2i, \qquad \lambda_3 = 1 - 2i,$$
$$\mathbf{v}_1 = (2, -3, 2), \qquad \mathbf{v}_2 = (0, 1, i), \qquad \mathbf{v}_3 = (0, 1, -i).$$

**Problem 11.** Not covered by our syllabus.

**Problem 12.**
$$e^t(c_1(\cos t, -\sin t) + c_2(\sin t, \cos t)).$$

**Problem 13.** Not covered by our syllabus.