Please turn in solutions for the following problems:

- Compute each real integral using complex integration techniques:

  (1) $\displaystyle\int_{-\infty}^{\infty} \frac{1}{x^6 + 1}\, dx$

  (2) $\displaystyle\int_{-\infty}^{\infty} \frac{x^2}{(x^2 + 4)(x^2 + 9)}\, dx$

  (3) $\displaystyle\int_{-\infty}^{\infty} \frac{x\sin(x)}{x^2 + 4}\, dx$

  (4) $\displaystyle\int_{-\infty}^{\infty} \frac{\cos(4x)}{(x^2 + 1)^2}\, dx$

  (5) $\displaystyle\int_{-\infty}^{\infty} \frac{x^2 \cos(x)}{(x^2 + 1)(x^2 + 16)}\, dx$

  (6) $\displaystyle\int_{0}^{\infty} \frac{\sqrt{x}}{(x^2 + 1)^2}\, dx$

  (7) $\displaystyle\int_{0}^{2\pi} \frac{2}{\cos(x) + 2}\, dx$

  (8) $\displaystyle\int_{0}^{2\pi} \frac{1}{5 + 4\sin(x)}\, dx$

In addition, I suggest that you work these problems from the Brown/Churchill textbook (but do not turn in):

- Page 267, problems 1, 2, 3, 4, 5, 6, 7
- Page 275-276, problems 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11
- Page 286-287, problems 1, 2, 3, 4, 5, 6
- Page 290-291, problems 1, 2, 3, 4, 5, 6, 7