Dr. Z.'s Math 421(1), (Fall 2014, RU) REAL Quiz #4

NAME: (print!) _____

E-MAIL ADDRESS: (print!) _____

1. Show that the given functions are orthogonal on the given interval.

$$f_1(x) = e^{x^2}x^7 \quad , \quad f_2(x) = e^{-x^2}(x^4 + x^2 + 1) \quad , \quad [-2, 2] \quad .$$

2. Show that $\{\cos nx\}$, $n = 1, 2, \ldots$ is orthogonal over the interval $[0, \pi]$. Also find the norm of each function.