Bonus Questions #3 (Due date Sunday, January 2, 2005)

1. Use the mean value theorem to show that $|\sin a - \sin b| \leq |a - b|$ for all $a$ and $b$.

2. Show that the equation $1 + 2x + x^3 + 4x^5 = 0$ has exactly one real root.
   (Hint: use Rolle’s theorem and the intermediate value theorem)