1. Prove that if LaTeX: n\in\mathbb{Z}^+, then LaTeX: n is even if and only if LaTeX: 7n+47n+4 is even.
2. Show that for all LaTeX: x\in\mathbb{R}, the product of at least one pair of the following is nonnegative:  
     
   LaTeX: 65x^{1000}-8x^{2001}+3x^{177}  
   LaTeX: 79x^{1212}-9x^{2399}+2x^{2001}  
   LaTeX: 24x^{4493}-5x^{8192}+7x^{1777}