Quiz 1 Math 102

Q1. Find $\lim_{n\to\infty} \frac{1}{n}\left[\sqrt{\frac{1}{2n}} + \sqrt{\frac{3}{2n}} + ... + \sqrt{\frac{2n+1}{2n}}\ \right]$

Q2. If $F(x) = e^{-x^2} - 5 + 8\int_0^{\sqrt{x}} t\ e^{-t^4} dt$, solve $F'(x) = 0$.

Q3. Prove that $2.\cos 1 \leq \int_1^1 \cos(1-x^2)dx \leq 2$