Q1]...[6 points] A man walks along a straight path at a speed of 1.5 m/s. A searchlight is located on the ground 6 m from the path and is kept focused on the man. At what rate is the searchlight rotating when the man is 8 m from the point on the path closest to the searchlight?
Q2]...[4 points] Find the derivative of the function

\[ y = \left[ x + \left( x + \sin^2 x \right)^3 \right]^4. \]