Problem 1: (15 Points) Evaluate the following integrals

(a) \[ \int \frac{\sqrt{1 + \ln x}}{x} \, dx \]

(b) \[ \int_0^\pi \frac{\cos x}{1 + \sin^2 x} \, dx \]

(c) \[ \int 2^x 3^{1-x} \, dx \]
Problem 2: (5 Points) Find the area of the region enclosed by the graphs of \( x = 2 - y^2 \) and \( y = x \).

Problem 3: (5 Points) A particle moves along a line so that its velocity at time \( t \) is \( v(t) = t^2 - t - 2 \) meter/sec. Find the distance traveled during the period \( 0 \leq t \leq 4 \).