(1) Consider the triangle in the first octant \( \{x, y, z \geq 0\} \) of the unit sphere \( \{x^2 + y^2 + z^2 = 1\} \) bounded by the following three geodesics.
\[
\gamma_1 = (\cos t, \sin t, 0).
\gamma_2 = (\cos t, \frac{\sqrt{2}}{2} \sin t, \frac{\sqrt{2}}{2} \sin t).
\gamma_3 = (0, \cos t, \sin t).
\]
Find the area of the triangle using the Gauss-Bonnet formula. (Recall that the sphere has constant curvature \( K = 1 \).)

(2) Consider the triangle in the hyperbolic upper half plane bounded by the following three geodesics.
\[
\gamma_1 = (\cos t, \sin t).
\gamma_2 = (\cos t + 1, \sin t).
\gamma_3 = (1/4, t).
\]
Find the area of the triangle using the Gauss-Bonnet formula. (Recall that the hyperbolic upper half plane \( \{y \geq 0\} \) has the first fundamental form \( \frac{1}{y^2} (dx^2 + dy^2) \), and it has constant curvature \( -1 \).)