8-3)

We know that the moment of inertia for the axis passing through the center of the hoop perpendicular to the plane of the hoop is MR^2. Call this I_Z.

First, find the moment of inertia for an axis along a diameter. Use the perpendicular axis theorem. Choose the x and y axes to be in the plane of the hoop crossing at the center. By symmetry, the moments along diameters are the same, so

$I_{DIAMETER} = I_X = I_Y$

$I_X + I_Y = I_Z = MR^2$

$I_X = {}^1/_2MR^2$

Now use the parallel axis theorem to move the axis from the diameter to the edge:
$I_{TANGENT} = I_{DIAMETER} + Mh^2 = {}^1/_2MR^2 + MR^2 = {}^3/_2MR^2$