Unpolarized light of intensity I_0 is incident upon a stack of $N+1$ ideal polarizing sheets. The sheets are all parallel to the xy plane, and the light wave is traveling in the $+z$ direction. Each sheet is rotated by an angle of $\pi/2N$ radians counterclockwise with respect to the *preceding* sheet, as viewed from the perspective of the light wave. The transmission axis of the first sheet is parallel to the x-axis.

(a) Start by making a <u>sketch</u> of this stack of polarizing sheets (just draw the first three polarizers, to get an idea of what is going on).

(b) What is the intensity of the light after it passes through the first sheet? And what is its polarization vector?

(c) What is the intensity of the light after it passes through the second sheet?

(d) Finally, what is the intensity of the light and the polarization vector after it passes through the last sheet? What is the <u>limiting value</u> of this intensity as the number of sheets gets very large?

(e) Find the intensity of the final transmitted light if $I_0 = 5$ W/m^2 and $N=3$.