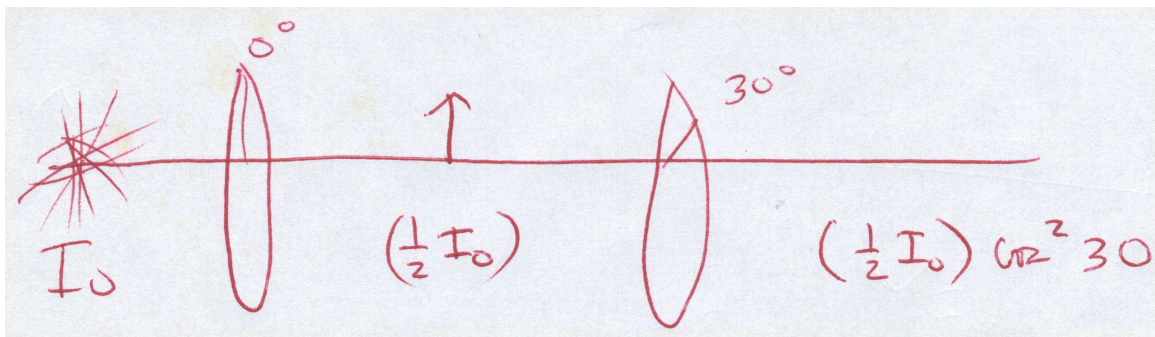


5. (20 pts.) Unpolarized light of intensity I_0 is incident upon a polarizing filter oriented at 0° . The emerging light strikes a second polarizing filter whose axis is at an angle of 30° relative to the first. What is the ratio of the intensity of the beam after it has passed through the second polarizer to the original intensity?

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$$\text{Ratio} = \frac{\frac{1}{2} I_0 \cos^2 30}{I_0} = \frac{1}{2} \left(\frac{\sqrt{3}}{2} \right)^2 = \boxed{\frac{3}{8} = 0.375}$$