Homework 0x02: Specular Scattering

Due Monday, Sept. 29, 2008 at 12:00 pm

In each of the following figures, ray is incident at the interface between a half-cylinder of glass with $\eta_g = 1.5$ and a surrounding medium of air with $\eta_a = 1.0$. In some figures the incident ray is show, in others, one of the exitant ray(s). Assume that except in the case of total internal reflection, that both refraction and reflection always occur. Draw the missing reflected and refracted rays and label their angle measure relative to the normal in radians. Please use the variables $\theta_i$, $\theta_m$ (“mirror”), $\theta_t$ (“transmit”). Don’t worry about the sign of these variables. Show your work for partial credit.

As always, this homework is available on the course website if you need to print a scratch copy, and you may discuss reflection and refraction in general with others but must solve the problems on your own.
\[ \theta_m = \pi/6 \]

\[ \theta_i = \pi/2 - \varepsilon \]

\[ \theta_f = \pi/4 \]