

Assignment #3. September 12, 2017

1) Exercise 3.5 page 88

2) Exercise 5.1 pages 183 – 184

3) From 2016 exam:

a) Define the bidirectional reflectance distribution function (BRDF): $\rho(\nu, -\hat{\Omega}', \hat{\Omega})$.

b) The incident radiance on a surface with a BRDF $= \rho(\nu, -\hat{\Omega}', \hat{\Omega})$ is $I_{\nu}^{-}(\hat{\Omega}')$.

Find an expression for the reflected radiance $I_{\nu r}^{+}(\hat{\Omega})$.

c) Assume that the incident radiance is uniform: $I_{\nu}^{-}(\hat{\Omega}') = \text{constant} = I$, and that the surface is Lambertian so that $\rho(\nu, -\hat{\Omega}', \hat{\Omega}) = \rho_L(\nu)$.

Show that the reflected irradiance is: $F_{\nu r}^{+} = \pi^2 \rho_L(\nu) I$.