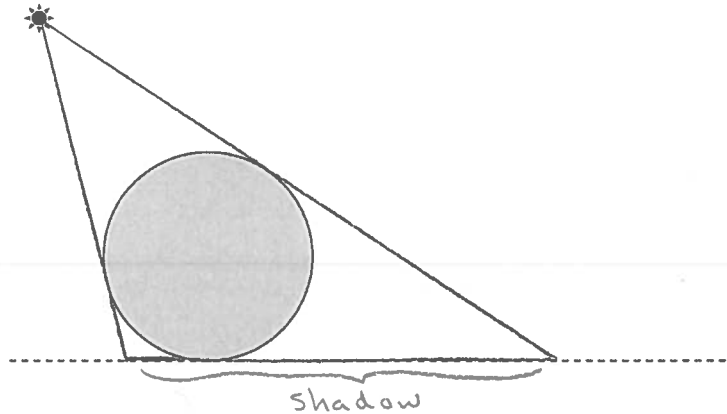


Solutions

Lighting Practice Problems

1. This diagram shows the side view of a light source and a sphere, both in the same vertical plane. Denote the portion of the dotted line (floor) that will be in shadow due to the sphere.



2. You are given 7 different points on the surface of a sphere. First you compute the unit normal vector at each point, then you compute the dot product of the normal vector with the unit light vector at each point.

(a) For a white light, draw a line from each dot product to the corresponding shading color.

point on the sphere	\vec{P}_1	\vec{P}_2	\vec{P}_3	\vec{P}_4	\vec{P}_5	\vec{P}_6	\vec{P}_7
dot product	-1	-0.8	-0.2	0	0.2	0.8	1

black

white

dark gray

light gray

(Hand-drawn lines connect the dot products to the shading boxes: -1 to black, -0.8 to dark gray, -0.2 to white, 0 to light gray, 0.2 to white, 0.8 to dark gray, 1 to black.)

(b) In the picture (side view) of a sphere and a light source below, label ⁷/₅ points that could be $\vec{P}_1, \dots, \vec{P}_7$ (i.e. those points would give roughly the dot products shown above).

