

23. Since the surface is perfectly absorbing, the radiation pressure is given by  $p_r = I/c$ , where  $I$  is the intensity. Since the bulb radiates uniformly in all directions, the intensity a distance  $r$  from it is given by  $I = P/4\pi r^2$ , where  $P$  is the power of the bulb. Thus

$$p_r = \frac{P}{4\pi r^2 c} = \frac{500 \text{ W}}{4\pi (1.5 \text{ m})^2 (2.998 \times 10^8 \text{ m/s})} = 5.9 \times 10^{-8} \text{ Pa} .$$