

72. We follow Sample Problem 34-2 in computing the sunlight intensity at the sail's location.

$$I = \frac{P_S}{4\pi r^2} = \frac{3.9 \times 10^{26} \text{ W}}{4\pi (3.0 \times 10^{11} \text{ m})^2} = 345 \text{ W/m}^2$$

With $A = (2.0 \text{ m})^2$, we use Eq. 34-33 to obtain the radiation force:

$$F = \frac{2IA}{c} = 9.2 \times 10^{-6} \text{ N} .$$