

6. When  $S$  is barely able to see  $B$  the light rays from  $B$  must reflect to  $S$  off the edge of the mirror. The angle of reflection in this case is  $45^\circ$ , since a line drawn from  $S$  to the mirror's edge makes a  $45^\circ$  angle relative to the wall. By the law of reflection, we find

$$\frac{x}{d/2} = \tan 45^\circ \quad \Rightarrow \quad x = \frac{d}{2} = \frac{3.0 \text{ m}}{2} = 1.5 \text{ m} .$$