

Exercise 226

A local art gallery has a portrait 3 ft in height that is hung 2.5 ft above the eye level of an average person. The viewing angle θ can be modeled by the function $\theta = \tan^{-1} \frac{5.5}{x} - \tan^{-1} \frac{2.5}{x}$, where x is the distance (in feet) from the portrait. Find the viewing angle when a person is 4 ft from the portrait.

Solution

Plug in $x = 4$ to the formula for θ .

$$\theta = \tan^{-1} \frac{5.5}{4} - \tan^{-1} \frac{2.5}{4} \approx 0.383 \text{ radians}$$