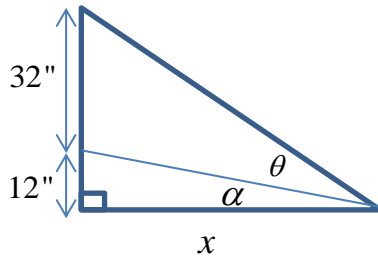


Activity - Viewing Angles for a Large Screen TV

Write down necessary steps and answers clearly to earn full credit.

A large screen television is mounted on a wall so that the bottom of the screen is 48 inches off the floor. The height of the television is 32 inches. Assume that the eye level of a person watching the television is 36 inches off the floor. The figure below represents this situation where θ is the viewing angle and x is the horizontal distance of the viewer from the television.



- Let $\beta = \theta + \alpha$ and use inverse trigonometric functions to find expressions for α and β in terms of x .
- Use your expressions for α and β to write θ as a function of x .
- Use a calculator to find the viewing angle to the nearest tenth of a degree for distances of 4, 6, 8, and 10 feet.

x	4 ft = ____ in	6 ft = ____ in	8 ft = ____ in	10 ft = ____ in
θ				

- Use technology to graph your function from part 2. Use this graph to estimate the maximum viewing angle and the corresponding viewing distance to the nearest tenth.
- The manufacturer suggests an “optimal” viewing distance of approximately 8 feet for this size television. Why do you think this does not correspond to the maximum viewing angle?