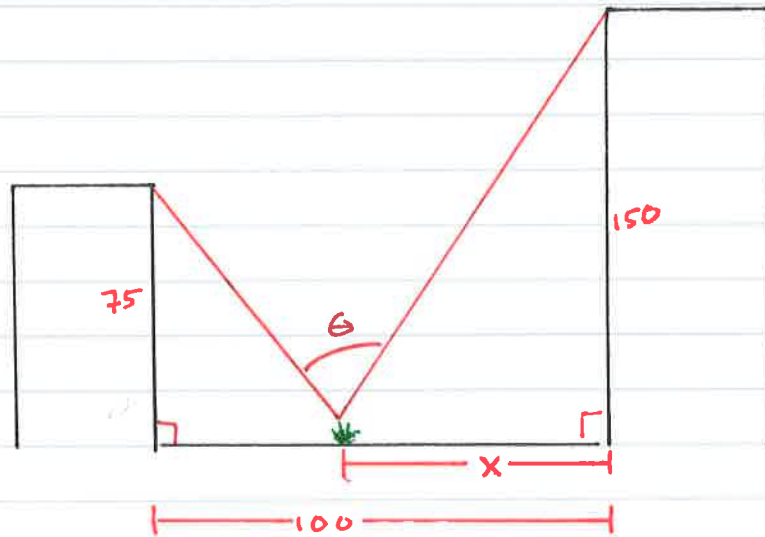[PROBLEM OF THE WEEK #3]

A SHRUB IS PLANTED IN A 100-FOOT-WIDE SPACE BETWEEN TWO BUILDINGS MEASURING 75 FT & 150 FT TALL. THE LOCATION OF THE SHRUB DETERMINES HOW MUCH SUN IT RECIEVES IN A DAY. SHOW (PROVE) THAT IF θ IS THE ANGLE IN THE FIGURE (BELOW) AND x IS THE DISTANCE OF THE SHRUB FROM THE TALLER BUILDING, THEN

$$\theta = \pi - \tan^{-1}\left(\frac{75}{100-x}\right) - \tan^{-1}\left(\frac{150}{x}\right)$$

WH/ θ IS IN RADIANS.

(not to scale)