- Sec 1.5.4 Quadratic Applications -

The formula $P = .006A^2 - .02A + 120$ models a man's normal systolic pressure, P (in mm Hg), at age A. Determine the age, to the nearest year, of a man whose normal systolic pressure is 125 mm Hg.

$$125 = .006A^2 - .02A + 120$$

$$0 = .006A^2 - .02A - 5$$

$$A = \frac{.02 \pm \sqrt{(.02)^2 - 4(.006)(-5)}}{2(.006)}$$

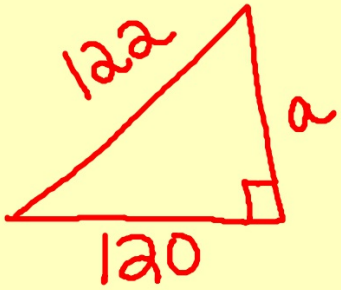
$$= \frac{.02 \pm \sqrt{.1204}}{.012}$$

$$\approx \frac{.02 \pm .3469}{.012}$$

≈ 30.575 $\quad$ ≈ -27.24

$\approx$ 31 years

A wheelchair ramp with a length of 122 inches has a horizontal distance of 120 inches. What is the ramp's vertical distance?

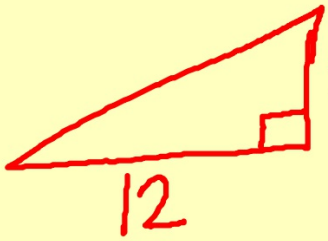


$a^2 + 120^2 = 122^2$

$a^2 + 14400 = 14884$

$a^2 = 484 \rightarrow a = 22''$

Construction laws state that for every vertical rise of 1 inch requires a horizontal run of 12 inches. Does this ramp satisfy that requirement?



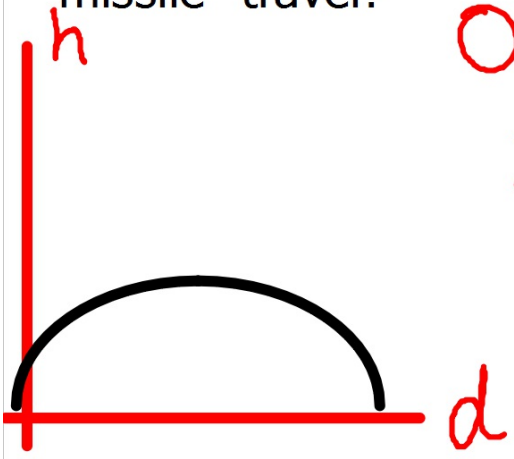
$m = 1/12 \approx .083$

$m = \frac{\text{rise}}{\text{run}} = \frac{22}{120} \approx .183$

If a missile follows a path modeled by

$$y = -.08x^2 + 1.9x + .3$$

where x is the horizontal distance and y is the height, both in miles, how far does the missile travel?



$$0 = -.08x^2 + 1.9x + .3$$

$$x = \frac{-1.9 \pm \sqrt{1.9^2 - 4(-.08)(.3)}}{2(-.08)}$$

$$\approx \frac{-1.9 \pm 1.925}{-.16}$$

~~-.156~~

23.9 miles

Suggested practice…

Sec 1.5
pp. 161-163

- 131, 132
- 135 **

**algebraic answer only, disregard bar chart

- 137*,138*:

*find the distance traveled only (disregard graphs)

- 141,142

131. 7

132. 9

135. 33 year-olds and 58 year-olds

136. about 72 years and 19.5 years (19 years)

137. 77.8 feet

138. 55.3 feet

141. 4.5 miles

142. 28.3 feet