Answer on Question #42534 – Math – Trigonometry

From a boat on the lake, the angle of elevation to the top of a cliff is 24°52'. If the base of the cliff is 944 feet from the boat, how high is the cliff (to the nearest foot)?
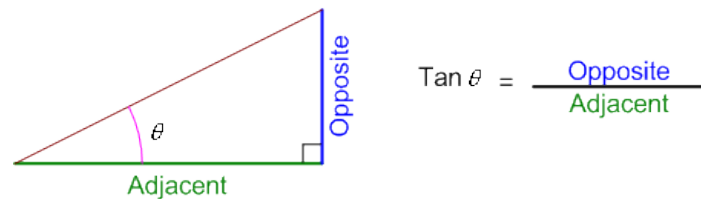
438 ft

441 ft

448 ft

451 ft

show work and explanations please

Solution:

So we have opposite and adjacent. If $S = 944\ ft$ is the adjacent leg, x is the opposite leg (height of the cliff). So we use tangent here:

$$\tan\theta = \frac{opposite}{adjacent} = \frac{x}{S}$$
$$x = S\tan\theta = 944\ ft \cdot \tan 24°52' = 438\ ft$$

Answer: heigth of the cliff is equal to 438 ft.