

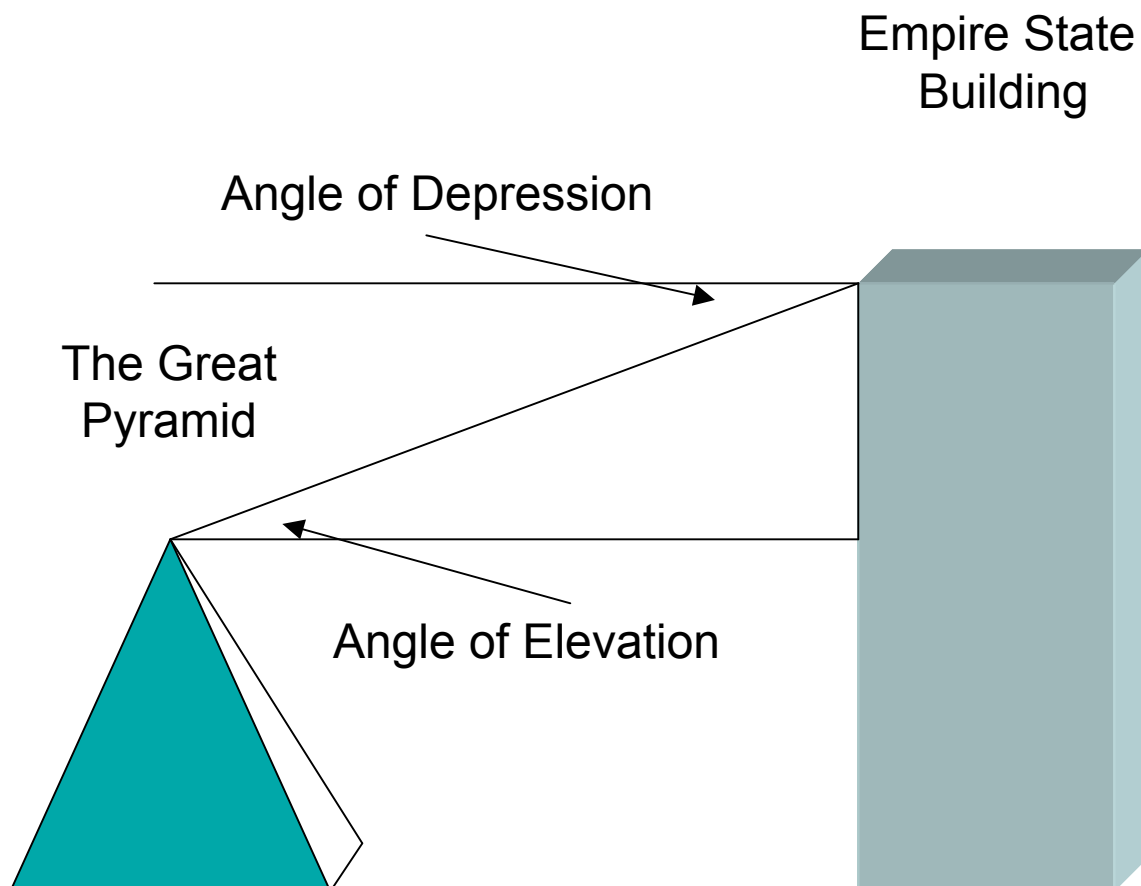
# Chapter 7 § 5

## Angles of Elevation and Depression

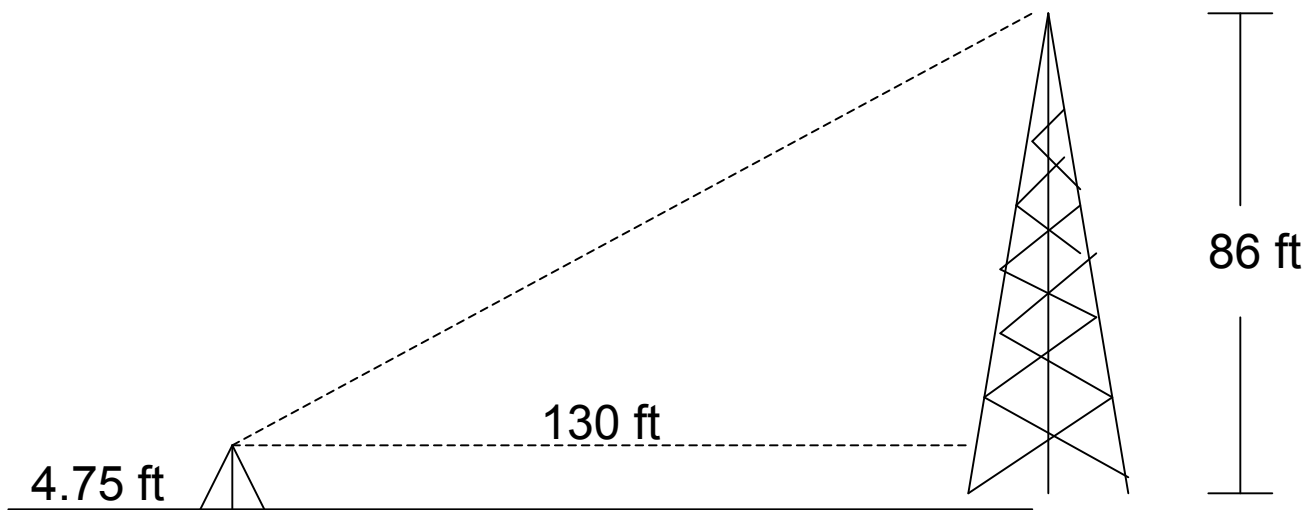
### Definitions :

**Angle of Elevation** – An angle formed by a horizontal line and the line of sight to an object above the level of horizon.

**Angle of Depression** – An angle formed by a horizontal line and the line of sight to an object below the level of horizon.



A surveyor is 130 feet from a tower. The tower is 86 feet high. The surveyor's instrument is 4.75 feet above the ground. Find the angle of elevation.



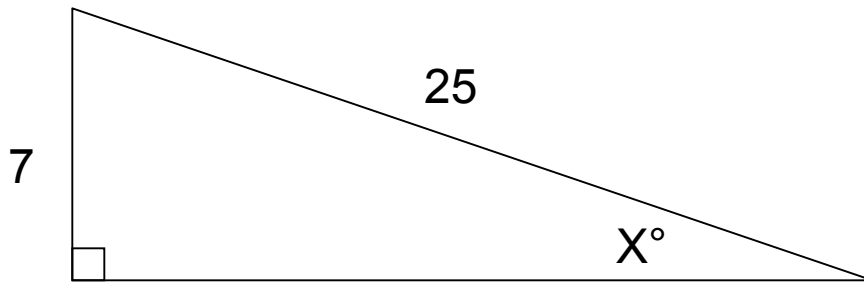
$$86 - 4.75 = 81.25$$

$$\tan A = \frac{81.25}{130}$$

$$\frac{\tan A}{\tan} = \frac{.625}{\tan}$$

$$A = \tan^{-1} (.625)$$

$$A = 32^\circ$$

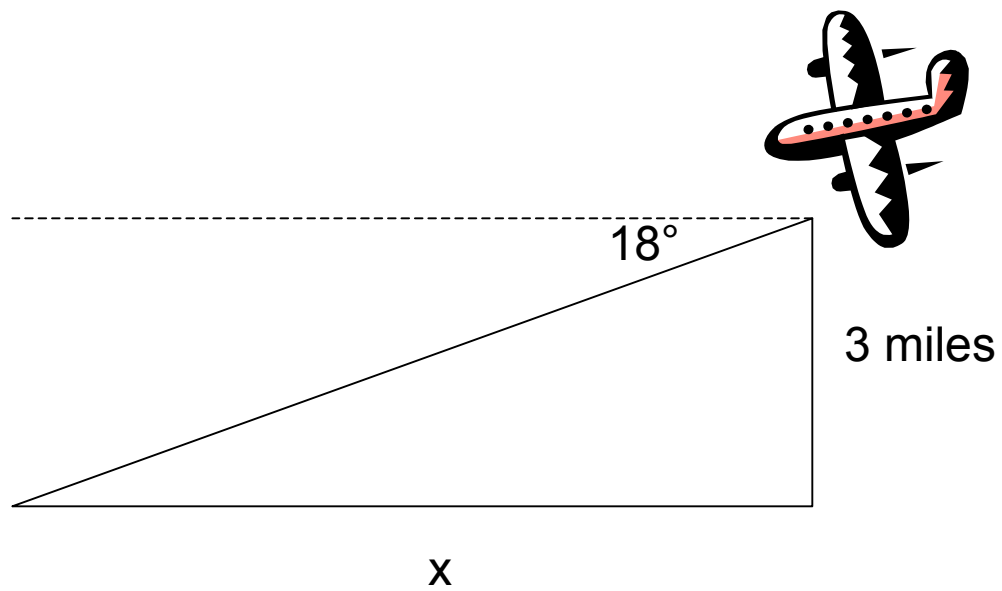


$$\sin X = \frac{7}{25}$$

$$\frac{\sin X}{\sin} = \frac{.28}{\sin}$$

$$X = \sin^{-1} (.28)$$

$$X = 16.26^\circ$$

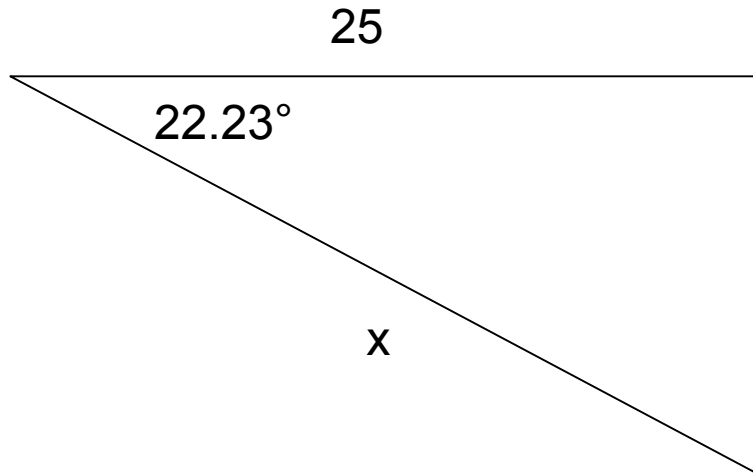


$$\tan 18^\circ = \frac{3}{x}$$

$$x \left[ \tan 18^\circ \right] = \left[ \frac{3}{x} \right] x$$

$$\frac{x (\tan 18)}{\tan 18} = \frac{3}{\tan 18}$$

$$x \approx 9.233$$



$$\cos 22.23^\circ = \frac{25}{x}$$

$$x \left[ \cos 22.23^\circ \right] = \left[ \frac{25}{x} \right] x$$

$$\frac{x (\cos 22.23)}{\cos 22.23} = \frac{25}{\cos 22.23}$$

$$x \approx 27$$