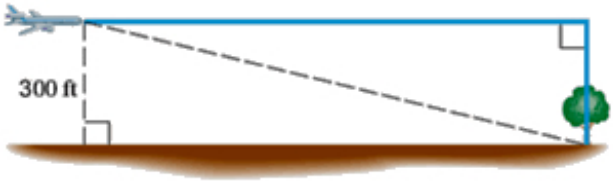
# King Fahd University of Petroleum and Minerals
## Prep-Year Math Program
## Math 002 - Term 151
## Recitation (5.4)

---

### Question1:

An airplane is flying 300 feet above the ground level. If the angle of depression from the plane to the base of a tree is $30^\circ$, then the horizontal distance the plane must fly to be directly over the tree is




**Answer:** $300\sqrt{3}$ feet

### Question2

Find the height of a building if the angle of elevation to the top of the building changes from $30°$ to $45°$ as the observer moves a distance of 80 ft toward the building.

**Answer:** $h = 40(\sqrt{3}+1)ft$

### Question3

A ladder of 6 meters length is placed against a wall forms an angle of $30^\circ$ with the ground. If the foot of the ladder is moved towards the wall, the angle changed to $45^\circ$. The exact distance moved by the top of the ladder on the wall is

A) $3\left(\sqrt{2}-1\right)$

B) $3\left(\sqrt{2}+1\right)$

C) $2-\sqrt{3}$

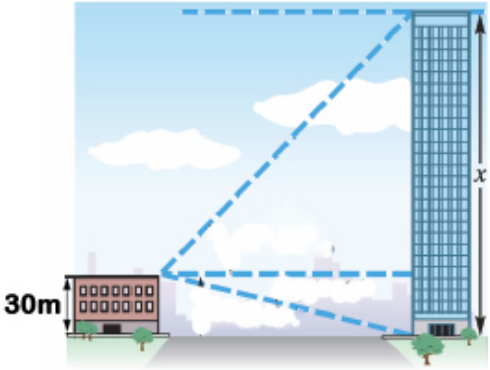
D) $2\left(\sqrt{3}-1\right)$

E) $4-\sqrt{3}$

**Answer:** $3\left(\sqrt{2}-1\right)$

### Question4

The angle of elevation from the top of a small building to the top of a taller building is $60^\circ$, while the angle of depression to the bottom is $30^\circ$. If the shorter building is 30 m high, then the height of the taller building is




A) $\left(30+60\sqrt{3}\right)$m

B) $150$m

C) $100\sqrt{3}$m

D) $120$m

E) $90\sqrt{3}$m

**Answer:** The height of the taller building is 120 $m$ .