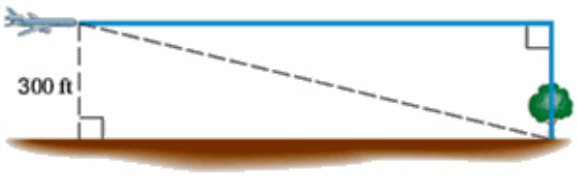
King Fahd University of Petroleum and Minerals
Prep-Year Math Program
Math 002 - Term 142
Recitation (5.4)

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°, 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° with the ground. If the foot of the ladder is moved towards the wall, the angle changed to 45°. 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) $2-\sqrt{3}$

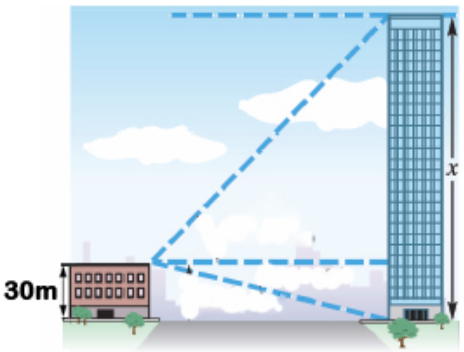
D) $2\left(\sqrt{3}-1\right)$

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°, while the angle of depression to the bottom is 30°. If the shorter building is 30 m high, then the height of the taller building is



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

B) $150\,\text{m}$

C) $100\sqrt{3}\,\text{m}$

D) $120\,\text{m}$

E) $90\sqrt{3}\,\text{m}$

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