



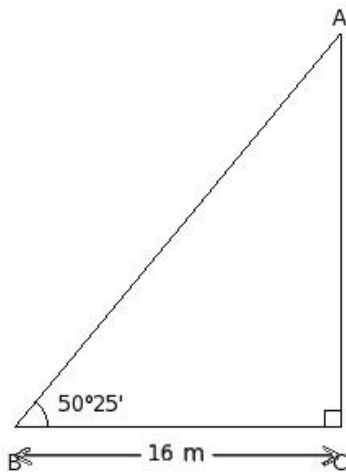
1. A chimney stands vertically on the ground. From a point on the ground, the angle of elevation of the top of the chimney is found to be $50^{\circ}25'$. If the distance between the observation point and the foot of the chimney is 16 m, find the distance between the observation point and the top of the chimney.

From Table of Natural Tangents

x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
50	1.1918	1.1960	1.2002	1.2045	1.2088	1.2131	1.2174	1.2218	1.2261	1.2305	7	14	22	29	36

From Table of Natural Cosines

x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
50	0.6428	0.6414	0.6401	0.6388	0.6374	0.6361	0.6347	0.6334	0.6320	0.6307	2	5	7	9	12



- (i) 25.11 m (ii) 20.11 m (iii) 30.11 m (iv) 22.11 m (v) 28.11 m

2. The upper part of a tree is broken into two parts without being detached. It makes an angle of $49^{\circ}8'$ with the ground. The top of the tree touches the ground at a distance of 70 m from the foot of the tree . Find the height of the tree before it was broken.

From Table of Natural Tangents

x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
49	1.1504	1.1544	1.1585	1.1626	1.1667	1.1708	1.1750	1.1792	1.1833	1.1875	7	14	21	27	34

From Table of Natural Cosines

x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
49	0.6561	0.6547	0.6534	0.6521	0.6508	0.6494	0.6481	0.6468	0.6455	0.6441	2	4	7	9	11

- (i) 187.89 m (ii) 171.89 m (iii) 189.89 m (iv) 212.89 m (v) 165.89 m

3. A man on the top of a vertical observation tower observes a car moving at a uniform speed coming directly towards him. If it takes 15 min for the angle of depression to change from 30° to 45° , how soon after this, will the car reach the observation tower?

- (i) 23 min 31 sec (ii) 21 min 30 sec (iii) 19 min 28 sec (iv) 17 min 27 sec (v) 20 min 29 sec

4. A tower stands vertically on the ground. From a point on the ground, the angle of elevation of the top of the tower

is found to be $\operatorname{cosec}^{-1}\left(\frac{7}{4}\right)$. If the distance between the point and the top of the tower is 120 m, find the height of the tower.

- (i) 71.57 m (ii) 63.57 m (iii) 65.57 m (iv) 73.57 m (v) 68.57 m

- A tower stands vertically on the ground. From a point on the ground, the angle of elevation of the top of the tower is found to be $\sec^{-1}\left(\frac{5}{3}\right)$. If the distance between the point and the foot of the tower is 10 m,

find the distance between the observation point and the top of the tower.

- (i) 21.67 m (ii) 16.67 m (iii) 13.67 m (iv) 19.67 m (v) 11.67 m

From the top of a 14 m high building, the angle of elevation of the top of a cable tower is $47^\circ 48'$ and the angle of depression of its foot is $28^\circ 15'$. Find the height of the cable tower.

6.

From Table of Natural Tangents															
x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
47	1.0724	1.0761	1.0799	1.0837	1.0875	1.0913	1.0951	1.0990	1.1028	1.1067	6	13	19	25	32
From Table of Natural Tangents															
x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
28	0.5317	0.5340	0.5362	0.5384	0.5407	0.5430	0.5452	0.5475	0.5498	0.5520	4	8	11	15	19

- (i) 47.73 m (ii) 37.73 m (iii) 42.73 m (iv) 45.73 m (v) 39.73 m

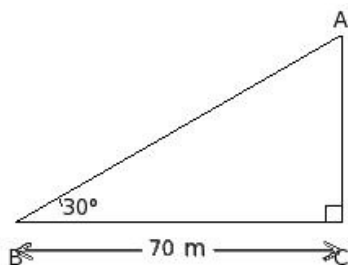
7. The angles of depression of two boats from the top of a cliff 100 m high are 30° and 60° respectively. Find the distance between the boats, if the boats are on the opposite sides of the cliff.

- (i) 214.95 m (ii) 230.95 m (iii) 257.95 m (iv) 225.95 m (v) 232.95 m

8. A flag is hoisted at the top of a building. From a point on the ground, the angle of elevation of the top of the flag staff is 60° and the angle of elevation of the top of the building is 45° . If the height of the flag staff is 11 m, find the height of the building.

- (i) 10.03 m (ii) 20.03 m (iii) 18.03 m (iv) 12.03 m (v) 15.03 m

9. A tower stands vertically on the ground. From a point on the ground, the angle of elevation of the top of the tower is found to be 30° . If the distance between the point and the foot of the tower is 70 m, find the distance between the observation point and the top of the tower.



- (i) $\frac{140}{3}\sqrt{3}$ m (ii) $70\sqrt{2}$ m (iii) $\frac{140}{3}\sqrt{18}$ m (iv) 140 m (v) $\frac{140}{3}$ m

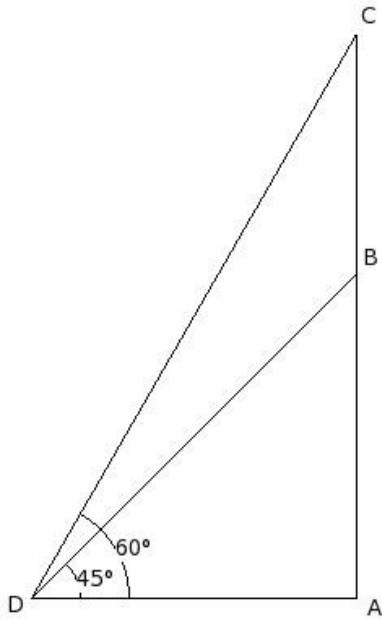
10. Two poles of equal height are standing opposite to each other on either side of a road which is 50 m wide. From a point between them on the road, the angles of elevation of the top of the poles are 60° and 45° respectively. Find the height of each pole and the distances of the point from the two poles.

- (i) height = 29.7 m, distances away = 29.7 m, 16.3 m (ii) height = 31.7 m, distances away = 31.7 m, 18.3 m
 (iii) height = 30.7 m, distances away = 30.7 m, 17.3 m (iv) height = 32.7 m, distances away = 32.7 m, 19.3 m
 (v) height = 33.7 m, distances away = 33.7 m, 20.3 m

11. The upper part of a tree is broken into two parts without being detached. It makes an angle of 45° with the ground. The top of the tree touches the ground at a distance of 60 m from the foot of the tree. Find the height of the tree before it was broken.

- (i) 146.85 m (ii) 162.85 m (iii) 128.85 m (iv) 144.85 m (v) 127.85 m

12. A flagstaff stands on the top of a building at a distance of 50 m away from the foot of building . The angle of elevation of the top of the flagstaff is 60° and the angle of elevation of the top of the building is 45° . Find the height of the flagstaff .



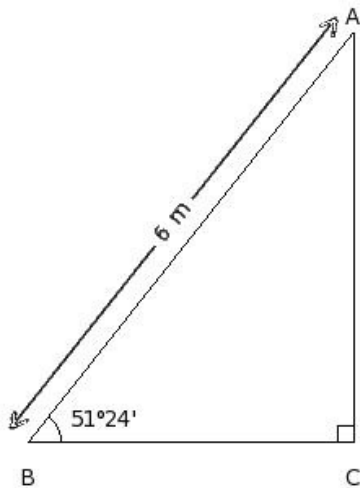
- (i) $(75\sqrt{2} - 25\sqrt{6})$ m (ii) $(50\sqrt{18} - 50\sqrt{6})$ m (iii) $(2 - \sqrt{3})$ m (iv) 5000 m (v) $(50\sqrt{3} - 50)$ m

A tower stands vertically on the ground. From a point on the ground, the angle of elevation of the top of the tower is found to be $51^\circ 24'$. If the distance between the observation point and the top of the tower is 6 m, find the height of the tower.

13.

From Table of Natural Sines															
x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
51	0.7771	0.7782	0.7793	0.7804	0.7815	0.7826	0.7837	0.7848	0.7859	0.7869	2	4	5	7	9

From Table of Natural Cosines															
x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
51	0.6293	0.6280	0.6266	0.6252	0.6239	0.6225	0.6211	0.6198	0.6184	0.9170	2	5	7	9	12

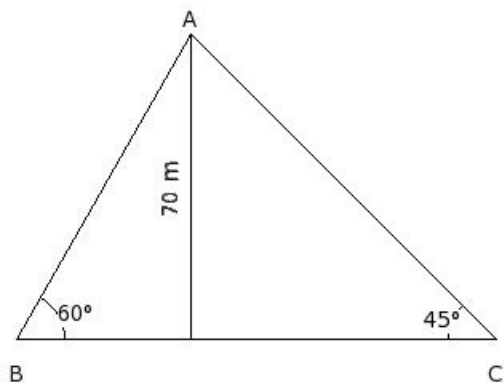


- (i) 4.69 m (ii) 5.69 m (iii) 6.69 m (iv) 2.69 m (v) 3.69 m

14. There are two temples one on each bank of a river, just opposite to each other. One of the temples is 20 m high. As observed from the top of this temple, the angles of depression of the top and foot of the other temple are 30° and 45° respectively. Find the width of the river .

- (i) 23.00 m (ii) 20.00 m (iii) 25.00 m (iv) 15.00 m (v) 17.00 m

15. Two boys are on opposite sides of a tower of 70 m height. They measure the angle of elevation of the top of the tower as 60° and 45° respectively. Find the distance between the two boys.



- (i) $(-2-\sqrt{3})m$ (ii) $(\frac{70}{3}\sqrt{3}+70)m$ (iii) $(-\frac{9800}{3})m$ (iv) $(\frac{70}{3}\sqrt{18}+70\sqrt{6})m$ (v) $(35\sqrt{2}+35\sqrt{6})m$

16. From the top of a 20 m high building, the angle of elevation of the top of a cable tower is 60° and the angle of depression of its foot is 30° . Find the height of the cable tower.

- (i) 80.00 m (ii) 85.00 m (iii) 77.00 m (iv) 75.00 m (v) 83.00 m

17. From the top of a light house which is 50 m high from the sea level, the angles of depression of two ships are 60° and 30° . If one ship is exactly behind the other on the same side of the light house, find the distance between the two ships.

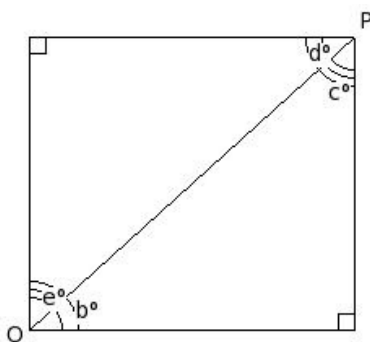
- (i) 52.73 m (ii) 57.73 m (iii) 54.73 m (iv) 60.73 m (v) 62.73 m

18. A tower stands vertically on the ground. From a point on the ground, the angle of elevation of the top of the tower is found to be $\cos^{-1}(\frac{1}{2})$. If the distance between the point and the foot of the tower is 60 m,

find the distance between the observation point and the top of the tower.

- (i) 112.00 m (ii) 120.00 m (iii) 143.00 m (iv) 92.00 m (v) 123.00 m

19. If P is the point of observation and the observed object is at point O, which of the following angles represent the angle of depression?



- (i) $\angle c$ (ii) $\angle d$ (iii) $\angle e$ (iv) $\angle b$

A pole stands vertically on the ground. From a point on the ground, the angle of elevation of the top of the pole is found to be $47^{\circ}48'$. If the distance between the observation point and the foot of the pole is 3 m, find the height of the pole.

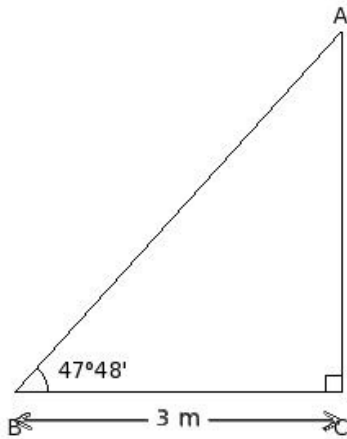
From Table of Natural Tangents

x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
47	1.0724	1.0761	1.0799	1.0837	1.0875	1.0913	1.0951	1.0990	1.1028	1.1067	6	13	19	25	32

From Table of Natural Cosines

x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
47	0.6820	0.6807	0.6794	0.6784	0.6769	0.6756	0.6743	0.6730	0.6717	0.6704	2	4	6	9	11

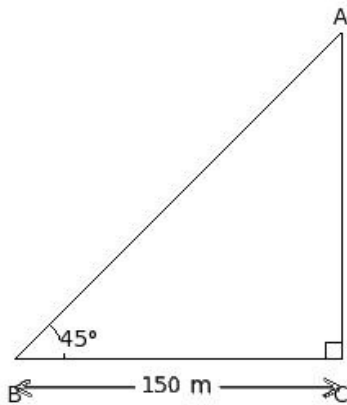
20.



- (i) 2.31 m (ii) 5.31 m (iii) 4.31 m (iv) 1.31 m (v) 3.31 m

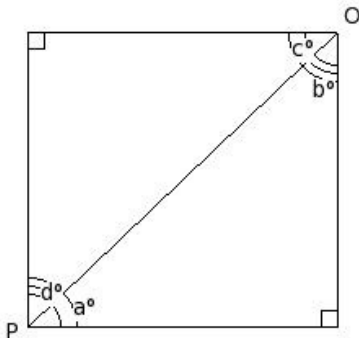
A chimney stands vertically on the ground. From a point on the ground, the angle of elevation of the top of the chimney is found to be 45° . If the distance between the point and the foot of the chimney is 150 m, find the height of the chimney.

21.



- (i) 147 m (ii) 150 m (iii) 149 m (iv) 151 m (v) 153 m

22. If P is the point of observation and the observed object is at point O, which of the following angles represent the angle of elevation?



- (i) $\angle a$ (ii) $\angle d$ (iii) $\angle b$ (iv) $\angle c$

23. A flag is hoisted at the top of a building . From a point on the ground, the angle of elevation of the top of the flag staff is 60° and the angle of elevation of the top of the building is 30° . If the height of the building is 19 m, find the height of the flag staff .

- (i) 41.00 m (ii) 38.00 m (iii) 35.00 m (iv) 33.00 m (v) 43.00 m

Two poles of equal height are standing opposite to each other on either side of a road which is 25 m wide. From a point between them on the road, the angles of elevation of the top of the poles are $25^\circ 35'$ and $46^\circ 47'$ respectively. Find the height of each pole and the distances of the point from the two poles .

From Table of Natural Tangents

x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
25	0.4663	0.4684	0.4706	0.4727	0.4748	0.4770	0.4791	0.4813	0.4834	0.4856	4	7	11	14	18

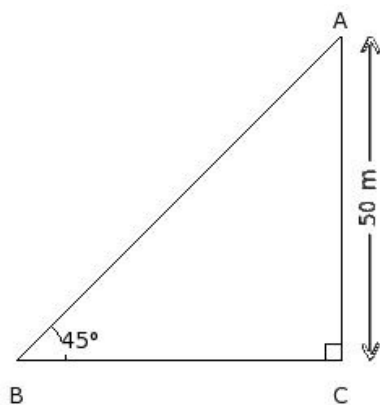
From Table of Natural Tangents

x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
46	1.0355	1.0392	1.0428	1.0464	1.0501	1.0538	1.0575	1.0612	1.0649	1.0686	6	12	18	25	31

24.

- (i) height = 8.26 m, distances away = 7.76 m, 17.24 m (ii) height = 9.26 m, distances away = 8.76 m, 18.24 m
 (iii) height = 6.26 m, distances away = 5.76 m, 15.24 m
 (iv) height = 7.26 m, distances away = 6.76 m, 16.24 m
 (v) height = 10.26 m, distances away = 9.76 m, 19.24 m

25. A chimney stands vertically on the ground. From a point on the ground, the angle of elevation of the top of the chimney is found to be 45° . If the height of the chimney is 50 m, find the distance between the observation point and the top of the chimney .



- (i) $25\sqrt{12}$ m (ii) $50\sqrt{2}$ m (iii) 100 m (iv) $100\sqrt{3}$ m (v) 50 m

Assignment Key

1) (i)	2) (i)	3) (v)	4) (v)	5) (ii)	6) (iii)
7) (ii)	8) (v)	9) (i)	10) (ii)	11) (iv)	12) (v)
13) (i)	14) (ii)	15) (ii)	16) (i)	17) (ii)	18) (ii)
19) (ii)	20) (v)	21) (ii)	22) (i)	23) (ii)	24) (i)
25) (ii)					