

## Applications of Trigonometry

### Multiple Choice Question

**1. [13-14 Final Exam, 13]**

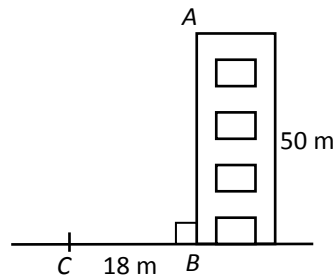
Peter walks down a steep road with a road sign indicating  $1 : n$ . If the road has an inclination  $9.5^\circ$ , what is the value of  $n$ ?

- A. 6
- B. 7
- C. 8
- D. 9

**2. [13-14 Final Exam, 14]**

In the figure,  $AB$  is a vertical wall of a building of height 50 m.  $C$  is an observation point 18 m away from  $B$  on the horizontal ground. Find the angle of elevation of  $A$  from  $C$ .

- A.  $19.8^\circ$
- B.  $70.2^\circ$
- C.  $110^\circ$
- D.  $160^\circ$



**3. [13-14 Final Exam, 27]**

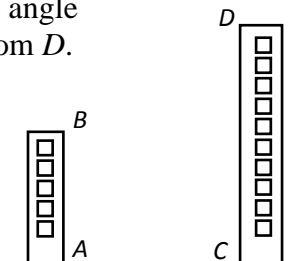
Two boats  $A$  and  $B$  leave a pier  $P$  at the same time. Boat  $A$  sails 1 km in the direction  $055^\circ$  and boat  $B$  sails 2 km in the direction  $145^\circ$ . Find the compass bearing of boat  $A$  from boat  $B$ .

- A.  $N8^\circ W$
- B.  $N27^\circ W$
- C.  $N35^\circ W$
- D.  $N82^\circ W$

**4. [14-15 Final Exam #10]**

In the figure,  $AB$  and  $CD$  are the heights of two buildings on the same level ground. If  $AB = 9$  m,  $AC = 20$  m and the angle of elevation of  $D$  from  $A$  is  $50^\circ$ , find the angle of depression of  $B$  from  $D$ .

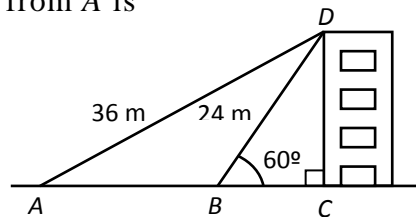
- A.  $21.3^\circ$
- B.  $24.2^\circ$
- C.  $36.6^\circ$
- D.  $53.4^\circ$



5. [15-16 Final Exam #11]

The angle of elevation of  $D$  from  $B$  is  $60^\circ$ . If the distance of  $D$  from  $A$  and  $B$  are 36 m and 24 m respectively, then the angle of elevation of  $D$  from  $A$  is

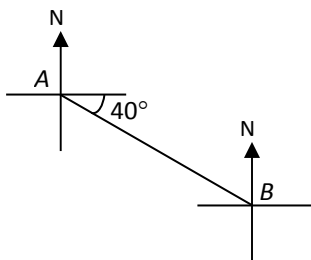
- A.  $35.3^\circ$ .
- B.  $49.1^\circ$ .
- C.  $54.7^\circ$ .
- D.  $70.5^\circ$ .



6. [15-16 Final Exam #10]

The compass bearing of  $A$  from  $B$  is

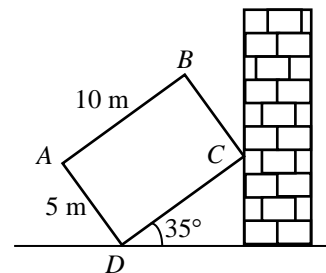
- A.  $N40^\circ W$ .
- B.  $N50^\circ W$ .
- C.  $W40^\circ N$ .
- D.  $W50^\circ N$ .



7. [15-16 Final Exam #29]

A rectangular box  $ABCD$  leans against a vertical wall as shown. Find the height of  $B$  from the ground.

- A. 8.60 m
- B. 9.83 m
- C. 11.0 m
- D. 12.3 m

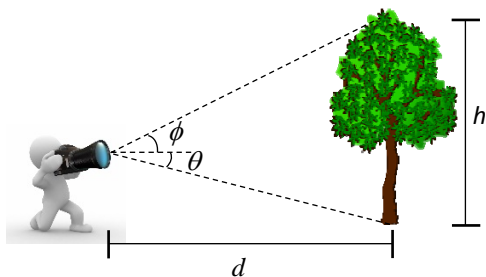


8. [16-17 Final Exam #11]

Find the inclination of a road with the gradient of 1:12.

- A.  $0.00145^\circ$
- B.  $0.0833^\circ$
- C.  $4.76^\circ$
- D.  $12^\circ$

9. [16-17 Final Exam #22]

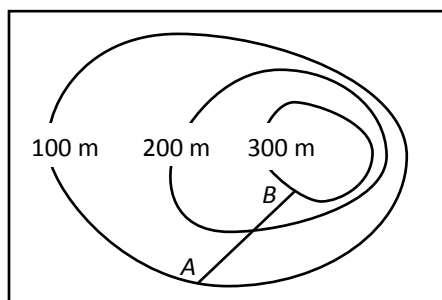


Refer to the figure,  $d =$

- A.  $\frac{h}{\tan \theta + \tan \phi}$ .
- B.  $\frac{h}{\frac{1}{\tan \theta} + \frac{1}{\tan \phi}}$ .
- C.  $h(\tan \theta + \tan \phi)$ .
- D.  $h\left(\frac{1}{\tan \theta} + \frac{1}{\tan \phi}\right)$ .

10. [17-18 Final Exam #9]

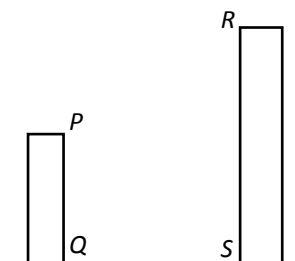
The figure shows part of a contour map drawn in the scale of 1 : 30 000. If road AB is 3 cm on the map, find the gradient of AB.



- A.  $\frac{2}{900}$
- B.  $\frac{1}{50}$
- C.  $\frac{1}{9}$
- D.  $\frac{2}{9}$

11. [17-18 Final Exam #20]

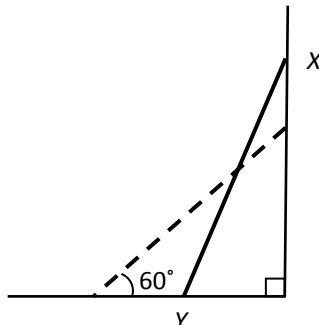
In the figure, PQ and RS are the heights of two buildings on the same level ground. If PQ = 45 m, RS = 65 m and the angle of depression of P from R is 55°, find the angle of elevation of R from Q.



- A. 77.8°
- B. 72.7°
- C. 66.2°
- D. 23.7°

**12. [17-18 Final Exam #21]**

A ladder  $XY$  is leaning against a vertical wall such that the angle between the ladder and the ground is  $a$ . The ladder then slides down such that the distance between the bottom of ladder and the wall is doubled the original distance and it makes an angle of  $60^\circ$  with the ground. Find  $a$  correct to 3 significant figures.



- A.  $64.3^\circ$
- B.  $75.0^\circ$
- C.  $75.5^\circ$
- D.  $80.4^\circ$