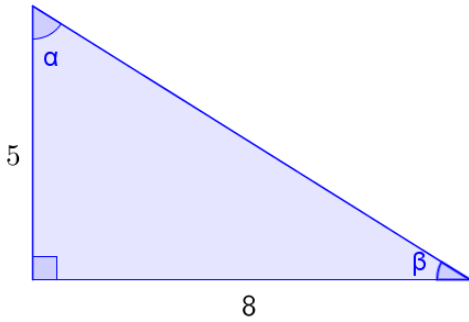# SM2 8.3: Trig Ratios

Problems: Use the figure below to answers questions 1-17. Leave answers in exact form.

1) $\sin \alpha$

2) $\csc \alpha$

3) $\sin \beta$

4) $\csc \beta$

5) $\cos \alpha$

6) $\sec \alpha$

7) $\cos \beta$
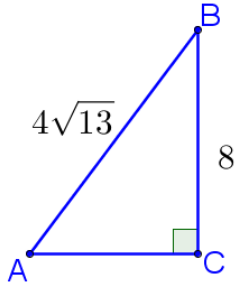
8) $\sec \beta$

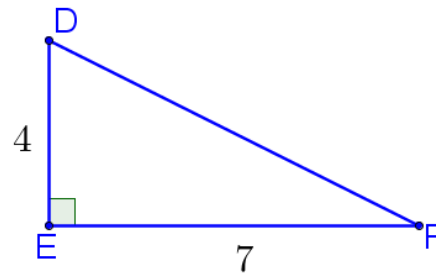9) $\tan \alpha$

10) $\cot \alpha$

11) $\tan \beta$

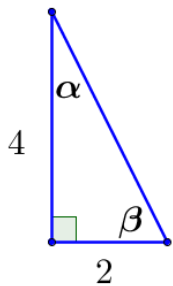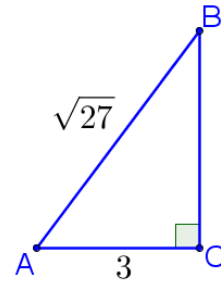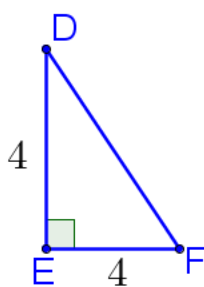12) $\cot \beta$

Find the indicated trig ratio.
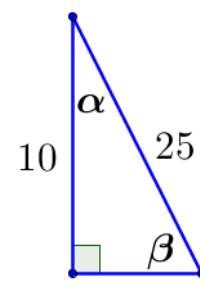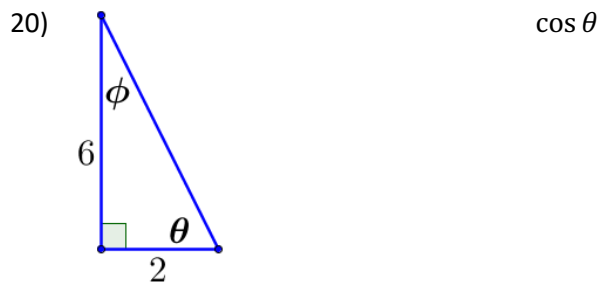
13) $\sin A$

14) $\tan F$

15) $\cos \alpha$

16) $\sec B$

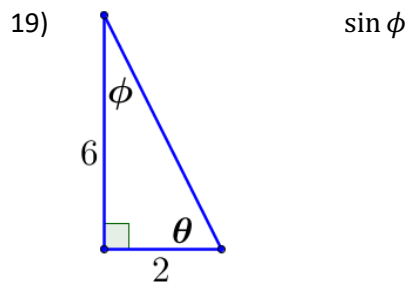17) $\csc D$
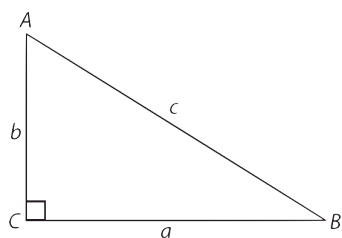

18) $\cot \beta$

19)

$\sin\phi$

20)

$\cos\theta$

Using the figure below, determine if each statement is true or false. Justify your response.

21) $\sin A = \sin B$

22) $\sin B = \cos A$

23) $\cos B = \sin A$

24) $\cos A = \cos B$

25) $\angle A$ and $\angle B$ are complementary.

26) Explain what $\sin A = \cos(90° - A)$ means.

27) Explain what $\cos A = \sin(90° - A)$ means.

Use the complementary properties of sine and cosine to answer the following questions.

28) If $\cos 34° = 0.829$, what is the $\sin 56°$?

29) If $\sin 40° = 0.643$, what is the $\cos 50°$?

30) If $\sin 30° = \frac{1}{2}$, what is the $\cos 60°$?

31) If $\cos 83° = .122$, what is the $\sin 7°$?

Find the indicated trig ratio.

32) If $\sin x = \frac{3}{5}$, what is the $\tan x$?

33) If $\cos x = \frac{12}{13}$, what is the $\sin x$?

34) If $\tan x = \frac{8}{7}$, what is the $\cos x$?

35) If $\sin x = \frac{\sqrt{3}}{2}$, what is the $\cos x$?

Application Problems:

36) A carpenter needs to measure the length of the beams that will support a roof. The roof will rise at an angle of 30° from the top of the walls. The peak of the roof is 14.43 feet above the top of the walls. The side adjacent to the 30° angle is half the width of the building. How long is each supporting beam, *b*?

Beam (*b*)

14.43 feet

30°

Building width = 50 feet
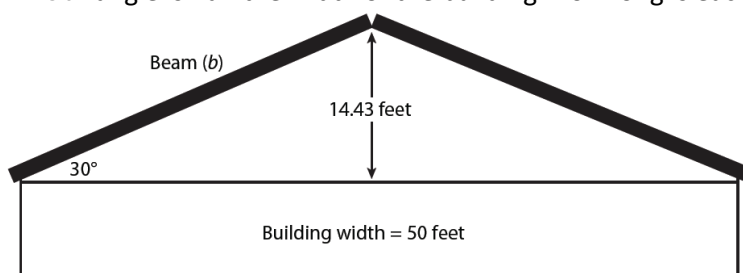
37) Students are having a contest to see who can find the tallest tree in a park. To win, a student must measure the height of the tree without climbing the tree. Martha locates a very tall oak tree. She measures that the tree's shadow is 45 feet long. Martha has a shadow that is 11.5 feet long. She is 5.75 feet tall. How tall is the oak tree?

Rays of sun

A

Oak tree shadow = 45 feet

Rays of sun

Height = 5.75 feet

Shadow = 11.5 feet