



계산력 연습

중 3 과정

[영역] 5.기하

5-3-2. 특수한 각의 삼각비, 사분원에서 삼각비의 값 구하기



◇ 「콘텐츠산업 진흥법 시행령」 제33조에 의한 표시

1) 제작연월일 : 2016-10-25

2) 제작자 : 교육지대(주)

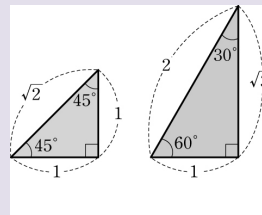
3) 이 콘텐츠는 「콘텐츠산업 진흥법」에 따라 최초 제작일부터 5년간 보호됩니다.

◇ 「콘텐츠산업 진흥법」 외에도 「저작권법」에 의하여 보호되는 콘텐츠의 경우, 그 콘텐츠의 전부 또는 일부를 무단으로 복제하거나 전송하는 것은 콘텐츠산업 진흥법 외에도 저작권법에 의한 법적 책임을 질 수 있습니다.

계산시 참고사항

1. 특수한 각의 삼각비

삼각비 \ A	0°	30°	45°	60°	90°
sin A	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1
cos A	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0
tan A	0	$\frac{\sqrt{3}}{3}$	1	$\sqrt{3}$	정할 수 없다.



참고

● $\sin 30^\circ = \cos 60^\circ$

$\sin 60^\circ = \cos 30^\circ$

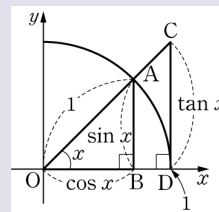
2. 사분원을 이용한 삼각비의 값 구하기

반지름의 길이가 1인 사분원에서 임의의 예각 x 에 대하여

1) $\sin x = \frac{\overline{AB}}{\overline{OA}} = \frac{\overline{AB}}{1} = \overline{AB}$

2) $\cos x = \frac{\overline{OB}}{\overline{OA}} = \frac{\overline{OB}}{1} = \overline{OB}$

3) $\tan x = \frac{\overline{CD}}{\overline{OD}} = \frac{\overline{CD}}{1} = \overline{CD}$



● $\triangle AOB \sim \triangle COD$ 임을 이용하여 $\tan x$ 의 값을 나타낸다.



특수한 각의 삼각비

▣ 다음 삼각비의 값을 구하여라.

1. $\sin 0^\circ$

2. $\cos 90^\circ$

3. $\tan 0^\circ$

4. $\sin 90^\circ$

5. $\cos 0^\circ$

▣ 다음을 계산하여라.

6. $\sin 45^\circ + \cos 45^\circ$

7. $\sin 90^\circ + \cos 0^\circ$

8. $\cos 0^\circ + \tan 0^\circ$

9. $\cos 90^\circ - \sin 90^\circ$

10. $\sin 60^\circ - \tan 30^\circ$



11. $\sin 60^\circ \times \cos 60^\circ$

12. $\cos 30^\circ \times \tan 60^\circ$

13. $\sin 30^\circ \div \cos 45^\circ$

14. $\tan 60^\circ \div \sin 30^\circ$

15. $\sin^2 30^\circ + \cos^2 30^\circ$

16. $\cos 30^\circ \times \sin 90^\circ$

17. $2\tan 45^\circ - \cos 0^\circ$

18. $\tan 45^\circ - \sqrt{3} \tan 60^\circ$

19. $\sin 60^\circ + \cos 30^\circ$

20. $\tan 45^\circ - \cos 60^\circ$

21. $\sin 45^\circ \times \cos 45^\circ$

22. $\tan 60^\circ \times \tan 30^\circ$

23. $\sin 60^\circ \div \cos 30^\circ$

24. $\tan 45^\circ \div \tan 60^\circ$

25. $\cos 0^\circ \times \sin 90^\circ$

26. $2\tan 0^\circ - \cos 90^\circ$

27. $\sin 30^\circ + \cos 60^\circ$

28. $\tan 60^\circ + \frac{1}{\tan 30^\circ}$

29. $\sin 60^\circ \div \tan 60^\circ$

30. $\cos^2 30^\circ + \sin^2 30^\circ$

31. $\sin 30^\circ \times 2\tan 45^\circ \div \cos 60^\circ$

32. $\tan 30^\circ \times \tan 45^\circ \times \cos 45^\circ$

33. $(\tan 45^\circ - \cos 60^\circ) \times \sin 30^\circ$

34. $3(\cos 90^\circ + \sin 90^\circ) - \sqrt{3} \tan 30^\circ$

35. $\cos 0^\circ \times \sin 30^\circ + \sin 90^\circ \times \cos 60^\circ$

36. $2\sin 45^\circ \times \cos 90^\circ - \sin 90^\circ \times \cos 30^\circ$

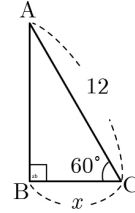
37. $\sin^2 90^\circ + \cos^2 90^\circ \times \cos 90^\circ$



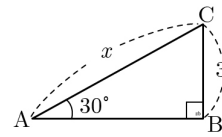
삼각비의 값을 이용하여 변의 길이, 각의 크기 구하기

■ 삼각비의 값을 이용하여 다음 그림에서 x 의 값을 구하여라.

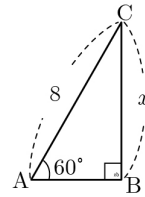
51.



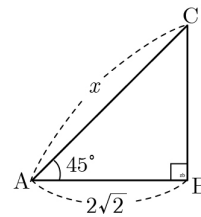
52.



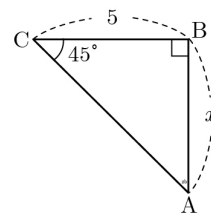
53.



54.



55.



38. $(\tan 60^\circ + \sin 0^\circ)(\cos 90^\circ - \cos 30^\circ)$

39. $4 \times \tan 60^\circ \times \cos 30^\circ - \frac{3}{\sin^2 30^\circ}$

40. $\sin 30^\circ \times \cos 0^\circ + \tan 45^\circ \times \cos^2 30^\circ \times \sin 90^\circ$

41. $-2\sin 60^\circ + \sqrt{3}\tan 45^\circ \times \tan 60^\circ$

42. $\sin 0^\circ \times \sin 45^\circ + \cos 60^\circ$

43. $\sin 60^\circ \times \tan 30^\circ - \cos 60^\circ$

44. $\sin 45^\circ \div \cos 45^\circ \times \tan 45^\circ$

45. $\sqrt{3}\tan 30^\circ - \sin 90^\circ \times \sin 30^\circ$

46. $\sin 0^\circ + \cos 90^\circ + \tan 0^\circ$

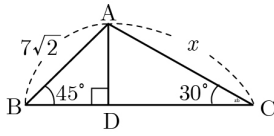
47. $(\cos 0^\circ - 2\sin 0^\circ)(\sin 90^\circ - 2\cos 90^\circ)$

48. $\frac{\cos 30^\circ}{\cos 60^\circ} \times \tan 30^\circ + \tan 45^\circ$

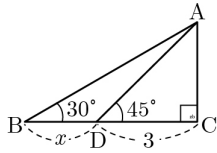
49. $\cos 60^\circ \div \sin 30^\circ + \sin 60^\circ \div \cos 30^\circ$

50. $(\sin 30^\circ - \cos 30^\circ)(\cos 60^\circ + \sin 60^\circ)$

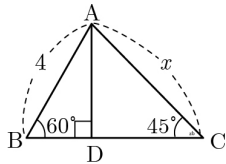
56.



57.

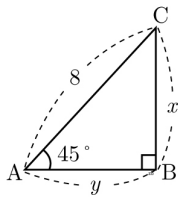


58.

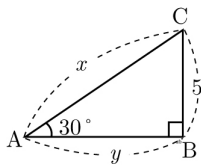


▣ 삼각비의 값을 이용하여 다음 그림에서 x , y 의 값을 각각 구하여라.

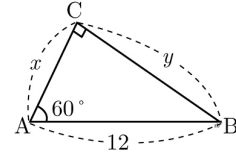
59.



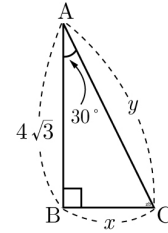
60.



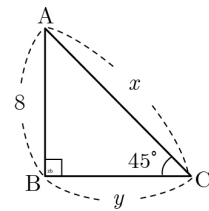
61.



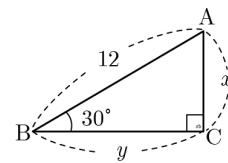
62.



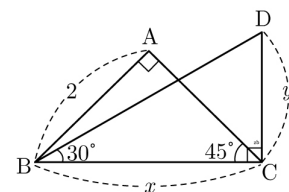
63.



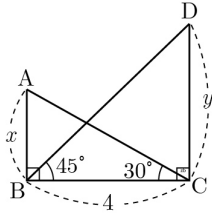
64.



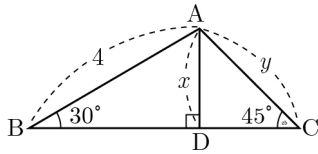
65.



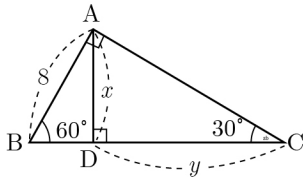
66.



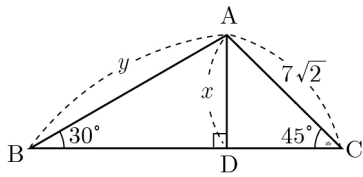
67.



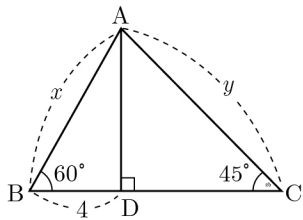
68.



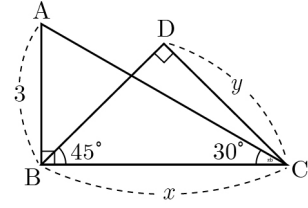
69.



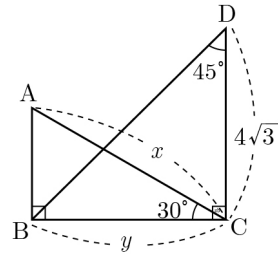
70.



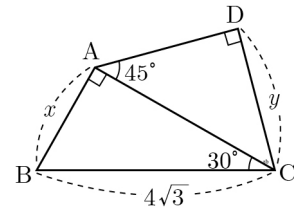
71.



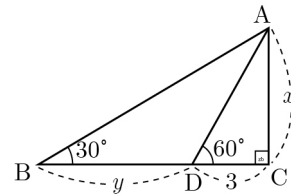
72.



73.



74.



■ $0^\circ < A < 90^\circ$ 일 때, 다음을 만족하는 $\angle A$ 의 크기를 구하여라.

75. $\cos A = \frac{\sqrt{2}}{2}$

76. $\sin A = \frac{1}{2}$

77. $\tan A = \sqrt{3}$

78. $\sin A = \frac{\sqrt{3}}{2}$

79. $\cos A = \frac{\sqrt{3}}{2}$

80. $\tan A = 1$

81. $\cos A = \frac{1}{2}$

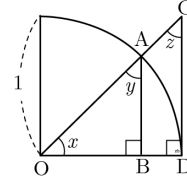
82. $\sin A = \frac{\sqrt{2}}{2}$

83. $\tan A = \frac{\sqrt{3}}{3}$



사분원에서 삼각비의 값 구하기

■ 다음 그림과 같이 반지름의 길이가 1인 사분원에서 옳은 것에는 ○표, 옳지 않은 것에는 ×표를 하여라. 또, 옳지 않은 것을 바르게 고쳐라.



84. $\sin x = \overline{AB}$ ()

85. $\cos x = \overline{CD}$ ()

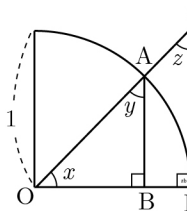
86. $\sin y = \overline{OA}$ ()

87. $\cos y = \overline{OB}$ ()

88. $\sin z = \overline{OB}$ ()

89. $\cos z = \overline{AB}$ ()

■ 다음 그림과 같이 반지름의 길이가 1인 사분원에서 다음 삼각비의 값을 나타내는 선분을 찾아라.



90. $\sin x$

91. $\cos x$

92. $\tan x$

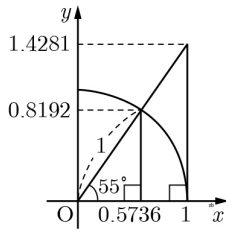
93. $\sin y$

94. $\cos y$

95. $\sin z$

96. $\cos z$

▣ 다음 그림과 같이 좌표평면 위의 원점 O 를 중심으로 하고 반지름의 길이가 1인 사분원에서 다음 삼각비의 값을 구하여라.



97. $\sin 55^\circ$

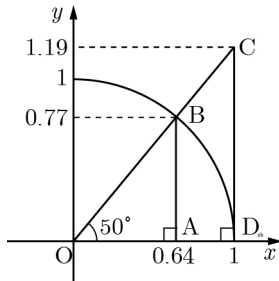
98. $\cos 55^\circ$

99. $\tan 55^\circ$

100. $\sin 35^\circ$

101. $\cos 35^\circ$

▣ 반지름의 길이가 1인 사분원에서 다음 삼각비의 값을 구하여라.



102. $\sin 50^\circ$

103. $\cos 50^\circ$

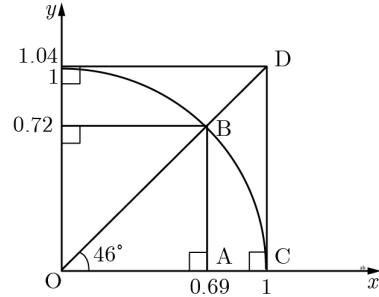
104. $\tan 50^\circ$

105. $\sin 40^\circ$

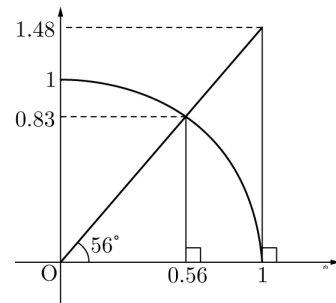
106. $\cos 40^\circ$

▣ 다음 물음에 답하여라.

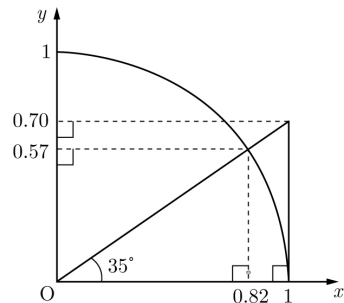
107. 다음 그림과 같이 반지름의 길이가 1인 사분원에서 $\cos 46^\circ + \tan 46^\circ$ 의 값을 구하여라.



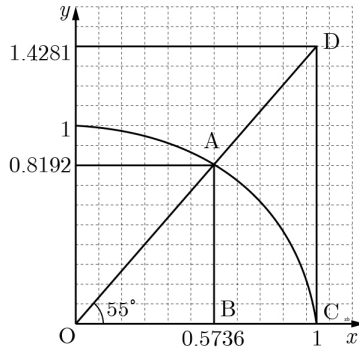
108. 다음은 반지름의 길이가 1인 사분원에 두 직각삼각형을 그린 것이다. $\sin 56^\circ + \cos 56^\circ + \tan 56^\circ$ 의 값을 구하여라.



109. 다음 그림과 같이 좌표평면 위의 원점 O 를 중심으로 하고, 반지름의 길이가 1인 사분원에서 $\tan 35^\circ - \cos 55^\circ$ 의 값을 구하여라.



110. 다음 그림과 같이 반지름의 길이가 1인 사분원을 이용하여 $\sin 55^\circ - \tan 55^\circ$ 의 값을 구하여라.



정답 및 해설



1) 0

2) 0

3) 0

4) 1

5) 1

6) $\sqrt{2}$

$$\Rightarrow \sin 45^\circ + \cos 45^\circ = \frac{\sqrt{2}}{2} + \frac{\sqrt{2}}{2} = \sqrt{2}$$

7) 2

$$\Rightarrow \sin 90^\circ + \cos 0^\circ = 1 + 1 = 2$$

8) 1

$$\Rightarrow \cos 0^\circ + \tan 0^\circ = 1 + 0 = 1$$

9) -1

$$\Rightarrow \cos 90^\circ - \sin 90^\circ = 0 - 1 = -1$$

10) $\frac{\sqrt{3}}{6}$

$$\Rightarrow \sin 60^\circ - \tan 30^\circ = \frac{\sqrt{3}}{2} - \frac{\sqrt{3}}{3} = \frac{\sqrt{3}}{6}$$

11) $\frac{\sqrt{3}}{4}$

$$\Rightarrow \sin 60^\circ \times \cos 60^\circ = \frac{\sqrt{3}}{2} \times \frac{1}{2} = \frac{\sqrt{3}}{4}$$

12) $\frac{3}{2}$

$$\Rightarrow \cos 30^\circ \times \tan 60^\circ = \frac{\sqrt{3}}{2} \times \sqrt{3} = \frac{3}{2}$$

13) $\frac{\sqrt{2}}{2}$

$$\Rightarrow \sin 30^\circ \div \cos 45^\circ = \frac{1}{2} \div \frac{\sqrt{2}}{2} = \frac{1}{2} \times \frac{2}{\sqrt{2}} = \frac{\sqrt{2}}{2}$$

14) $2\sqrt{3}$

$$\Rightarrow \tan 60^\circ \div \sin 30^\circ = \sqrt{3} \div \frac{1}{2} = \sqrt{3} \times 2 = 2\sqrt{3}$$

15) 1

$$\Rightarrow \sin^2 30^\circ + \cos^2 30^\circ = \left(\frac{1}{2}\right)^2 + \left(\frac{\sqrt{3}}{2}\right)^2 = \frac{1}{4} + \frac{3}{4} = 1$$

16) $\frac{\sqrt{3}}{2}$

$$\Rightarrow \cos 30^\circ \times \sin 90^\circ = \frac{\sqrt{3}}{2} \times 1 = \frac{\sqrt{3}}{2}$$

17) 1

$$\Rightarrow 2\tan 45^\circ - \cos 0^\circ = 2 \times 1 - 1 = 1$$

18) -2

$$\Rightarrow \tan 45^\circ - \sqrt{3} \tan 60^\circ = 1 - \sqrt{3} \times \sqrt{3} = 1 - 3 = -2$$

19) $\sqrt{3}$

$$\Rightarrow \sin 60^\circ + \cos 30^\circ = \frac{\sqrt{3}}{2} + \frac{\sqrt{3}}{2} = \sqrt{3}$$

20) $\frac{1}{2}$

$$\Rightarrow \tan 45^\circ - \cos 60^\circ = 1 - \frac{1}{2} = \frac{1}{2}$$

21) $\frac{1}{2}$

$$\Rightarrow \sin 45^\circ \times \cos 45^\circ = \frac{\sqrt{2}}{2} \times \frac{\sqrt{2}}{2} = \frac{1}{2}$$

22) 1

$$\Rightarrow \tan 60^\circ \times \tan 30^\circ = \sqrt{3} \times \frac{\sqrt{3}}{3} = 1$$

23) 1

$$\Rightarrow \sin 60^\circ \div \cos 30^\circ = \frac{\sqrt{3}}{2} \div \frac{\sqrt{3}}{2} = 1$$

24) $\frac{\sqrt{3}}{3}$

$$\Rightarrow \tan 45^\circ \div \tan 60^\circ = 1 \div \sqrt{3} = \frac{\sqrt{3}}{3}$$

25) 1

$$\Rightarrow \cos 0^\circ \times \sin 90^\circ = 1 \times 1 = 1$$

26) 0

$$\Rightarrow 2\tan 0^\circ - \cos 90^\circ = 2 \times 0 - 0 = 0$$

27) 1

$$\Rightarrow \sin 30^\circ + \cos 60^\circ = \frac{1}{2} + \frac{1}{2} = 1$$

28) $2\sqrt{3}$

$$\Rightarrow \tan 60^\circ + \frac{1}{\tan 30^\circ} = \sqrt{3} + \frac{1}{\frac{1}{\sqrt{3}}} = \sqrt{3} + \sqrt{3} = 2\sqrt{3}$$

29) $\frac{1}{2}$

$$\Rightarrow \sin 60^\circ \div \tan 60^\circ = \frac{\sqrt{3}}{2} \div \sqrt{3} = \frac{1}{2}$$

30) 1

$$\Rightarrow \cos^2 30^\circ + \sin^2 30^\circ = \left(\frac{\sqrt{3}}{2}\right)^2 + \left(\frac{1}{2}\right)^2 = \frac{3}{4} + \frac{1}{4} = 1$$

31) 2

$$\Rightarrow \sin 30^\circ \times 2 \tan 45^\circ \div \cos 60^\circ = \frac{1}{2} \times 2 \times 1 \div \frac{1}{2} = 2$$

32) $\frac{\sqrt{6}}{6}$

$$\Rightarrow \tan 30^\circ \times \tan 45^\circ \times \cos 45^\circ = \frac{\sqrt{3}}{3} \times 1 \times \frac{\sqrt{2}}{2} = \frac{\sqrt{6}}{6}$$

33) $\frac{1}{4}$

$$\Rightarrow (\tan 45^\circ - \cos 60^\circ) \times \sin 30^\circ = \left(1 - \frac{1}{2}\right) \times \frac{1}{2} = \frac{1}{4}$$

34) 2

$$\begin{aligned} \Rightarrow 3(\cos 90^\circ + \sin 90^\circ) - \sqrt{3} \tan 30^\circ \\ = 3(0+1) - \sqrt{3} \times \frac{\sqrt{3}}{3} = 3-1=2 \end{aligned}$$

35) 1

$$\begin{aligned} \Rightarrow \cos 0^\circ \times \sin 30^\circ + \sin 90^\circ \times \cos 60^\circ \\ = 1 \times \frac{1}{2} + 1 \times \frac{1}{2} = \frac{1}{2} + \frac{1}{2} = 1 \end{aligned}$$

36) $-\frac{\sqrt{3}}{2}$

$$\begin{aligned} \Rightarrow 2 \sin 45^\circ \times \cos 90^\circ - \sin 90^\circ \times \cos 30^\circ \\ = 2 \times \frac{\sqrt{2}}{2} \times 0 - 1 \times \frac{\sqrt{3}}{2} = 0 - \frac{\sqrt{3}}{2} = -\frac{\sqrt{3}}{2} \end{aligned}$$

37) 1

$$\Rightarrow \sin^2 90^\circ + \cos^2 90^\circ \times \cos 90^\circ = 1 + 0 \times 0 = 1$$

38) $-\frac{3}{2}$

$$\begin{aligned} \Rightarrow (\tan 60^\circ + \sin 0^\circ)(\cos 90^\circ - \cos 30^\circ) \\ = (\sqrt{3} + 0)\left(0 - \frac{\sqrt{3}}{2}\right) = \sqrt{3} \times \left(-\frac{\sqrt{3}}{2}\right) = -\frac{3}{2} \end{aligned}$$

39) -6

$$\begin{aligned} \Rightarrow 4 \tan 60^\circ \times \cos 30^\circ - \frac{3}{\sin^2 30^\circ} \\ = 4 \times \sqrt{3} \times \frac{\sqrt{3}}{2} - 3 \div \left(\frac{1}{2}\right)^2 = 6 - 12 = -6 \end{aligned}$$

40) $\frac{5}{4}$

$$\Rightarrow \sin 30^\circ \times \cos 0^\circ + \tan 45^\circ \times \cos^2 30^\circ \times \sin 90^\circ$$

$$= \frac{1}{2} \times 1 + 1 \times \left(\frac{\sqrt{3}}{2}\right)^2 \times 1 = \frac{1}{2} + \frac{3}{4} = \frac{5}{4}$$

41) $3 - \sqrt{3}$

$$\begin{aligned} \Rightarrow -2 \sin 60^\circ + \sqrt{3} \tan 45^\circ \times \tan 60^\circ \\ = -2 \times \frac{\sqrt{3}}{2} + \sqrt{3} \times 1 \times \sqrt{3} = -\sqrt{3} + 3 \end{aligned}$$

42) $\frac{1}{2}$

$$\Rightarrow \sin 0^\circ \times \sin 45^\circ + \cos 60^\circ = 0 \times \frac{\sqrt{2}}{2} + \frac{1}{2} = \frac{1}{2}$$

43) 0

$$\Rightarrow \sin 60^\circ \times \tan 30^\circ - \cos 60^\circ = \frac{\sqrt{3}}{2} \times \frac{1}{\sqrt{3}} - \frac{1}{2} = 0$$

44) 1

$$\Rightarrow \sin 45^\circ \div \cos 45^\circ \times \tan 45^\circ = \frac{\sqrt{2}}{2} \div \frac{\sqrt{2}}{2} \times 1 = 1$$

45) $\frac{1}{2}$

$$\begin{aligned} \Rightarrow \sqrt{3} \tan 30^\circ - \sin 90^\circ \times \sin 30^\circ \\ = \sqrt{3} \times \frac{\sqrt{3}}{3} - 1 \times \frac{1}{2} = \frac{1}{2} \end{aligned}$$

46) 0

$$\Rightarrow \sin 0^\circ + \cos 90^\circ + \tan 0^\circ = 0 + 0 + 0 = 0$$

47) 1

$$\begin{aligned} \Rightarrow (\cos 0^\circ - 2 \sin 0^\circ)(\sin 90^\circ - 2 \cos 90^\circ) \\ = (1 - 2 \times 0)(1 - 2 \times 0) = 1 \times 1 = 1 \end{aligned}$$

48) 2

$$\begin{aligned} \Rightarrow \frac{\cos 30^\circ}{\cos 60^\circ} \times \tan 30^\circ + \tan 45^\circ \\ = \frac{\sqrt{3}}{2} \div \frac{1}{2} \times \frac{\sqrt{3}}{3} + 1 = 1 + 1 = 2 \end{aligned}$$

49) 2

$$\begin{aligned} \Rightarrow \cos 60^\circ \div \sin 30^\circ + \sin 60^\circ \div \cos 30^\circ \\ = \frac{1}{2} \div \frac{1}{2} + \frac{\sqrt{3}}{2} \div \frac{\sqrt{3}}{2} = 1 + 1 = 2 \end{aligned}$$

50) $-\frac{1}{2}$

$$\begin{aligned} \Rightarrow (\sin 30^\circ - \cos 30^\circ)(\cos 60^\circ + \sin 60^\circ) \\ = \left(\frac{1}{2} - \frac{\sqrt{3}}{2}\right)\left(\frac{1}{2} + \frac{\sqrt{3}}{2}\right) = \frac{1}{4} - \frac{3}{4} = -\frac{1}{2} \end{aligned}$$

51) 6

$$\Rightarrow \cos 60^\circ = \frac{1}{2} \text{ 이므로 } \frac{x}{12} = \frac{1}{2} \quad \therefore x = 6$$

52) 6

$$\Rightarrow \sin 30^\circ = \frac{1}{2} \text{ 이므로 } \frac{\overline{BC}}{\overline{AC}} = \frac{3}{x} = \frac{1}{2} \quad \therefore x = 6$$

53) $4\sqrt{3}$

$$\Rightarrow \sin 60^\circ = \frac{\sqrt{3}}{2} \text{ 이므로 } \frac{x}{8} = \frac{\sqrt{3}}{2} \quad \therefore x = 4\sqrt{3}$$

54) 4

$$\Rightarrow \cos 45^\circ = \frac{\sqrt{2}}{2} \text{ 이므로 } \frac{\overline{AB}}{\overline{AC}} = \frac{2\sqrt{2}}{x} = \frac{\sqrt{2}}{2} \\ \therefore x = 4$$

55) 5

$$\Rightarrow \tan 45^\circ = 1 \text{ 이므로 } \frac{x}{5} = 1 \quad \therefore x = 5$$

56) 14

$$\Rightarrow \triangle ABD \text{ 에서 } \sin 45^\circ = \frac{\sqrt{2}}{2} \text{ 이므로}$$

$$\frac{\overline{AD}}{7\sqrt{2}} = \frac{\sqrt{2}}{2} \quad \therefore \overline{AD} = 7$$

$$\triangle ACD \text{ 에서 } \sin 30^\circ = \frac{1}{2} \text{ 이므로}$$

$$\frac{7}{x} = \frac{1}{2} \quad \therefore x = 14$$

57) $3\sqrt{3}-3$

$$\Rightarrow \triangle ADC \text{ 에서 } \tan 45^\circ = 1 \text{ 이므로 } \overline{AC} = 3$$

$$\triangle ABC \text{ 에서 } \tan 30^\circ = \frac{\sqrt{3}}{3} \text{ 이므로}$$

$$\frac{\overline{AC}}{x+3} = \frac{\sqrt{3}}{3} \quad \therefore x = 3\sqrt{3}-3$$

58) $2\sqrt{6}$

$$\Rightarrow \triangle ABD \text{ 에서 } \sin 60^\circ = \frac{\sqrt{3}}{2} \text{ 이므로}$$

$$\frac{\overline{AD}}{4} = \frac{\sqrt{3}}{2} \quad \therefore \overline{AD} = 2\sqrt{3}$$

$$\triangle ACD \text{ 에서 } \sin 45^\circ = \frac{\sqrt{2}}{2} \text{ 이므로}$$

$$\frac{\overline{AD}}{x} = \frac{\sqrt{2}}{2} \quad \therefore x = 2\sqrt{6}$$

59) $x = 4\sqrt{2}, y = 4\sqrt{2}$

$$\Rightarrow \frac{x}{8} = \frac{\sqrt{2}}{2} \text{ 에서 } x = 4\sqrt{2}, \frac{y}{8} = \frac{\sqrt{2}}{2} \text{ 에서 } y = 4\sqrt{2}$$

60) $x = 10, y = 5\sqrt{3}$

$$\Rightarrow \frac{5}{x} = \frac{1}{2} \text{ 에서 } x = 10, \frac{5}{y} = \frac{1}{\sqrt{3}} \text{ 에서 } y = 5\sqrt{3}$$

61) $x = 6, y = 6\sqrt{3}$

$$\Rightarrow \frac{x}{12} = \frac{1}{2} \text{ 에서 } x = 6, \frac{y}{12} = \frac{\sqrt{3}}{2} \text{ 에서 } y = 6\sqrt{3}$$

62) $x = 4, y = 8$

$$\Rightarrow \frac{4\sqrt{3}}{x} = \sqrt{3} \text{ 에서 } x = 4, \frac{4\sqrt{3}}{y} = \frac{\sqrt{3}}{2} \text{ 에서 } y = 8$$

63) $x = 8\sqrt{2}, y = 8$

$$\Rightarrow \sin 45^\circ = \frac{8}{x} \text{ 이므로 } x = \frac{8}{\sin 45^\circ} \quad \therefore x = 8\sqrt{2}$$

$$\tan 45^\circ = \frac{8}{y} \text{ 이므로 } y = \frac{8}{\tan 45^\circ} \quad \therefore y = 8$$

64) $x = 6, y = 6\sqrt{3}$

$$\Rightarrow \sin 30^\circ = \frac{x}{12} \text{ 이므로 } x = 12\sin 30^\circ \quad \therefore x = 6$$

$$\cos 30^\circ = \frac{y}{12} \text{ 이므로 } y = 12\cos 30^\circ \quad \therefore y = 6\sqrt{3}$$

65) $x = 2\sqrt{2}, y = \frac{2\sqrt{6}}{3}$

$$\Rightarrow \triangle ABC \text{ 에서 } x = \frac{2}{\sin 45^\circ} = 2\sqrt{2}$$

$$\triangle BCD \text{ 에서 } y = 2\sqrt{2} \tan 30^\circ = \frac{2\sqrt{6}}{3}$$

66) $x = \frac{4\sqrt{3}}{3}, y = 4$

$$\Rightarrow \text{직각삼각형 } ABC \text{ 에서}$$

$$x = 4\tan 30^\circ = 4 \times \frac{\sqrt{3}}{3} = \frac{4\sqrt{3}}{3}$$

$$\text{직각삼각형 } BCD \text{ 에서 } y = 4\tan 45^\circ = 4 \times 1 = 4$$

67) $x = 2, y = 2\sqrt{2}$

$$\Rightarrow \triangle ABD \text{ 에서 } \sin 30^\circ = \frac{x}{4} = \frac{1}{2} \quad \therefore x = \frac{1}{2} \times 4 = 2$$

$$\triangle ACD \text{ 에서 } \sin 45^\circ = \frac{2}{y} = \frac{\sqrt{2}}{2}$$

$$\therefore y = 2 \times \frac{2}{\sqrt{2}} = 2\sqrt{2}$$

68) $x = 4\sqrt{3}, y = 12$

$$\Rightarrow \triangle ABD \text{ 에서 } \sin 60^\circ = \frac{x}{8} = \frac{\sqrt{3}}{2}$$

$$\therefore x = \frac{\sqrt{3}}{2} \times 8 = 4\sqrt{3}$$

$$\triangle ACD \text{ 에서 } \tan 30^\circ = \frac{x}{y} = \frac{4\sqrt{3}}{y} = \frac{\sqrt{3}}{3}$$

$$\therefore y = 4\sqrt{3} \times \frac{3}{\sqrt{3}} = 12$$

69) $x = 7, y = 14$

$$\Rightarrow \triangle ACD \text{ 에서 } \sin 45^\circ = \frac{x}{7\sqrt{2}} = \frac{\sqrt{2}}{2}$$

$$\therefore x = \frac{\sqrt{2}}{2} \times 7\sqrt{2} = 7$$

$$\triangle ABD \text{에서 } \sin 30^\circ = \frac{7}{y} = \frac{1}{2}$$

$$\therefore y = 7 \times 2 = 14$$

$$70) \ x = 8, y = 4\sqrt{6}$$

$$\Rightarrow \triangle ABD \text{에서 } \cos 60^\circ = \frac{4}{x} = \frac{1}{2} \quad \therefore x = 4 \times 2 = 8$$

$$\text{또, } \tan 60^\circ = \frac{\overline{AD}}{4} = \sqrt{3} \text{ 이므로 } \overline{AD} = 4\sqrt{3}$$

$$\triangle ACD \text{에서 } \sin 45^\circ = \frac{4\sqrt{3}}{y} = \frac{\sqrt{2}}{2}$$

$$\therefore y = 4\sqrt{3} \times \frac{2}{\sqrt{2}} = 4\sqrt{6}$$

$$71) \ x = 3\sqrt{3}, y = \frac{3}{2}\sqrt{6}$$

$$\Rightarrow \triangle ABC \text{에서 } \tan 30^\circ = \frac{3}{x} = \frac{\sqrt{3}}{3}$$

$$\therefore x = 3 \times \frac{3}{\sqrt{3}} = 3\sqrt{3}$$

$$\triangle BCD \text{에서 } \sin 45^\circ = \frac{y}{3\sqrt{3}} = \frac{\sqrt{2}}{2}$$

$$\therefore y = \frac{\sqrt{2}}{2} \times 3\sqrt{3} = \frac{3}{2}\sqrt{6}$$

$$72) \ x = 8, y = 4\sqrt{3}$$

$$\Rightarrow \triangle BCD \text{에서 } \tan 45^\circ = \frac{y}{4\sqrt{3}} = 1 \quad \therefore y = 4\sqrt{3}$$

$$\triangle ABC \text{에서 } \cos 30^\circ = \frac{4\sqrt{3}}{x} = \frac{\sqrt{3}}{2}$$

$$\therefore x = 4\sqrt{3} \times \frac{2}{\sqrt{3}} = 8$$

$$73) \ x = 2\sqrt{3}, y = 3\sqrt{2}$$

$$\Rightarrow \triangle ABC \text{에서 } \sin 30^\circ = \frac{x}{4\sqrt{3}} = \frac{1}{2}$$

$$\therefore x = \frac{1}{2} \times 4\sqrt{3} = 2\sqrt{3}$$

$$\text{또, } \cos 30^\circ = \frac{\overline{AC}}{4\sqrt{3}} = \frac{\sqrt{3}}{2} \text{ 이므로}$$

$$\overline{AC} = \frac{\sqrt{3}}{2} \times 4\sqrt{3} = 6$$

$$\triangle ACD \text{에서 } \sin 45^\circ = \frac{y}{6} = \frac{\sqrt{2}}{2}$$

$$\therefore y = \frac{\sqrt{2}}{2} \times 6 = 3\sqrt{2}$$

$$74) \ x = 3\sqrt{3}, y = 6$$

$$\Rightarrow \triangle ACD \text{에서 } \tan 60^\circ = \frac{x}{3} = \sqrt{3} \quad \therefore x = 3\sqrt{3}$$

$$\triangle ABC \text{에서 } \tan 30^\circ = \frac{3\sqrt{3}}{y+3} = \frac{\sqrt{3}}{3} \text{ 이므로}$$

$$y+3 = 3\sqrt{3} \times \frac{3}{\sqrt{3}} = 9 \quad \therefore y = 6$$

$$75) \ 45^\circ$$

$$\Rightarrow \cos 45^\circ = \frac{\sqrt{2}}{2} \text{ 이므로 } \angle A = 45^\circ$$

$$76) \ 30^\circ$$

$$\Rightarrow \sin 30^\circ = \frac{1}{2} \text{ 이므로 } \angle A = 30^\circ$$

$$77) \ 60^\circ$$

$$\Rightarrow \tan 60^\circ = \sqrt{3} \text{ 이므로 } \angle A = 60^\circ$$

$$78) \ 60^\circ$$

$$\Rightarrow \sin 60^\circ = \frac{\sqrt{3}}{2} \text{ 이므로 } \angle A = 60^\circ$$

$$79) \ 30^\circ$$

$$\Rightarrow \cos 30^\circ = \frac{\sqrt{3}}{2} \text{ 이므로 } \angle A = 30^\circ$$

$$80) \ 45^\circ$$

$$\Rightarrow \tan 45^\circ = 1 \text{ 이므로 } \angle A = 45^\circ$$

$$81) \ 60^\circ$$

$$\Rightarrow \cos 60^\circ = \frac{1}{2} \text{ 이므로 } \angle A = 60^\circ$$

$$82) \ 45^\circ$$

$$\Rightarrow \sin 45^\circ = \frac{\sqrt{2}}{2} \text{ 이므로 } \angle A = 45^\circ$$

$$83) \ 30^\circ$$

$$\Rightarrow \tan 30^\circ = \frac{\sqrt{3}}{3} \text{ 이므로 } \angle A = 30^\circ$$

$$84) \ \bigcirc$$

$$85) \ \times, \cos x = \overline{OB}$$

$$86) \ \times, \sin y = \overline{OB}$$

$$87) \ \times, \cos y = \overline{AB}$$

$$88) \ \bigcirc$$

$$89) \ \bigcirc$$

$$90) \ \overline{AB}$$

$$\Rightarrow \sin x = \frac{\overline{AB}}{\overline{OA}} = \frac{\overline{AB}}{1} = \overline{AB}$$

91) \overline{OB}

$$\Rightarrow \cos x = \frac{\overline{OB}}{\overline{OA}} = \frac{\overline{OB}}{1} = \overline{OB}$$

92) \overline{CD}

$$\Rightarrow \tan x = \frac{\overline{CD}}{\overline{OD}} = \frac{\overline{CD}}{1} = \overline{CD}$$

93) \overline{OB}

$$\Rightarrow \sin y = \frac{\overline{OB}}{\overline{OA}} = \frac{\overline{OB}}{1} = \overline{OB}$$

94) \overline{AB}

$$\Rightarrow \cos y = \frac{\overline{AB}}{\overline{OA}} = \frac{\overline{AB}}{1} = \overline{AB}$$

95) \overline{OB}

$$\Rightarrow \sin z = \sin y = \overline{OB}$$

96) \overline{AB}

$$\Rightarrow \cos z = \cos y = \overline{AB}$$

97) 0.8192

98) 0.5736

99) 1.4281

100) 0.5736

101) 0.8192

102) 0.77

$$\Rightarrow \sin 50^\circ = \frac{\overline{AB}}{\overline{OB}} = \frac{0.77}{1} = 0.77$$

103) 0.64

$$\Rightarrow \cos 50^\circ = \frac{\overline{OA}}{\overline{OB}} = \frac{0.64}{1} = 0.64$$

104) 1.19

$$\Rightarrow \tan 50^\circ = \frac{\overline{CD}}{\overline{OD}} = \frac{1.19}{1} = 1.19$$

105) 0.64

$$\Rightarrow \triangle AOB \text{에서 } \angle OBA = 90^\circ - 50^\circ = 40^\circ$$

$$\sin 40^\circ = \frac{\overline{OA}}{\overline{OB}} = \frac{0.64}{1} = 0.64$$

106) 0.77

$$\Rightarrow \cos 40^\circ = \frac{\overline{AB}}{\overline{OB}} = \frac{0.77}{1} = 0.77$$

107) 1.73

$$\Rightarrow \cos 46^\circ = \frac{\overline{OA}}{\overline{OB}} = \frac{0.69}{1} = 0.69,$$

$$\tan 46^\circ = \frac{\overline{CD}}{\overline{OC}} = \frac{1.04}{1} = 1.04$$

$$\therefore \cos 46^\circ + \tan 46^\circ = 0.69 + 1.04 = 1.73$$

108) 2.87

$$\begin{aligned} \Rightarrow \sin 56^\circ + \cos 56^\circ + \tan 56^\circ \\ = \frac{0.83}{1} + \frac{0.56}{1} + \frac{1.48}{1} = 0.83 + 0.56 + 1.48 = 2.87 \end{aligned}$$

109) 0.13

$$\begin{aligned} \Rightarrow \tan 35^\circ = \frac{0.70}{1} = 0.70, \cos 55^\circ = \frac{0.57}{1} = 0.57 \text{이므로} \\ \tan 35^\circ - \cos 55^\circ = 0.13 \end{aligned}$$

110) -0.6089

$$\begin{aligned} \Rightarrow \sin 55^\circ = \overline{AB} = 0.8192, \tan 55^\circ = \overline{CD} = 1.4281 \\ \therefore \sin 55^\circ - \tan 55^\circ = 0.8192 - 1.4281 = -0.6089 \end{aligned}$$