# 부록 E 해답

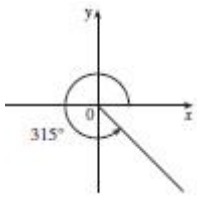
## 부록

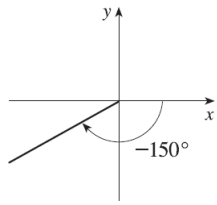
### 연습문제 A

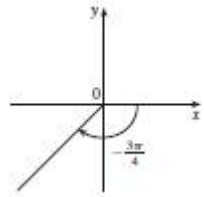
01. $\frac{7\pi}{6}$ 02. $\frac{5\pi}{3}$ 03. $\frac{\pi}{20}$ 04. $-\frac{7\pi}{4}$ 05. $5\pi$ 06. $\frac{\pi}{5}$

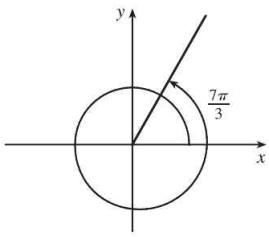
07. $720^\circ$ 08. $-630^\circ$ 09. $75^\circ$ 10. $480^\circ$ 11. $-67.5^\circ$ 12. $\frac{900^\circ}{\pi}$

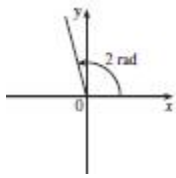
13. $3\pi\,\text{cm}$ 14. $4\pi\,\text{cm}$ 15. $\frac{2}{3}\,\text{rad} = (120/\pi)^\circ$ 16. $\frac{8}{\pi}\,\text{cm}$

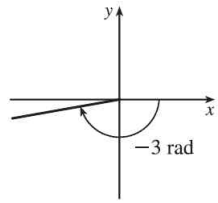
17. 


18. 


19. 


20. 


21. 


22. 


23. $\sin(3\pi/4) = 1/\sqrt{2}$, $\cos(3\pi/4) = -1/\sqrt{2}$, $\tan(3\pi/4) = -1$,
$\csc(3\pi/4) = \sqrt{2}$, $\sec(3\pi/4) = -\sqrt{2}$, $\cot(3\pi/4) = -1$

24. $\sin\frac{4\pi}{3} = \frac{-\sqrt{3}}{2}$, $\cos\frac{4\pi}{3} = \frac{-1}{2}$, $\tan\frac{4\pi}{3} = \sqrt{3}$,
$\csc\frac{4\pi}{3} = \frac{-2}{\sqrt{3}}$, $\sec\frac{4\pi}{3} = -2$, $\cot\frac{4\pi}{3} = \frac{1}{\sqrt{3}}$

25. $\sin(9\pi/2) = 1$, $\cos(9\pi/2) = 0$, $\csc(9\pi/2) = 1$,
$\cot(9\pi/2) = 0$, $\tan(9\pi/2)$와 $\sec(9\pi/2)$는 정의되지 않는다.

26. $\sin(-5\pi) = 0$, $\cos(-5\pi) = -1$, $\tan(-5\pi) = 0$,
$\csc(-5\pi)$는 정의되지 않는다. $\sec(-5\pi) = -1$, $\cot(-5\pi)$는 정의되지 않는다.

27. $\sin(5\pi/6) = \frac{1}{2}$, $\cos(5\pi/6) = -\sqrt{3}/2$, $\tan(5\pi/6) = -1/\sqrt{3}$,
$\csc(5\pi/6) = 2$, $\sec(5\pi/6) = -2/\sqrt{3}$, $\cot(5\pi/6) = -\sqrt{3}$

28. $\sin\frac{11\pi}{4} = \frac{1}{\sqrt{2}}$, $\cos\frac{11\pi}{4} = -\frac{1}{\sqrt{2}}$, $\tan\frac{11\pi}{4} = -1$,

$\csc\frac{11\pi}{4}=\sqrt{2},\ \sec\frac{11\pi}{4}=-\sqrt{2},\ \cot\frac{11\pi}{4}=-1$

**29.** $\cos\theta=\frac{4}{5},\ \tan\theta=\frac{3}{4},\ \csc\theta=\frac{5}{3},\ \sec\theta=\frac{5}{4},\ \cot\theta=\frac{4}{3}$

**30.** $\sin\alpha=\frac{2}{\sqrt{5}},\ \cos\alpha=\frac{1}{\sqrt{5}},\ \csc\alpha=\frac{\sqrt{5}}{2},\ \sec\alpha=\sqrt{5},\ \cot\alpha=\frac{1}{2}$

**31.** $\sin\phi=\sqrt{5}/3,\ \cos\phi=-\frac{2}{3},\ \tan\phi=-\sqrt{5}/2,\ \csc\phi=3/\sqrt{5},\ \cot\phi=-2/\sqrt{5}$

**32.** $\sin x=-\frac{2\sqrt{2}}{3},\ \tan x=2\sqrt{2},\ \csc x=-\frac{3}{2\sqrt{2}},\ \sec x=-3,\ \cot x=\frac{1}{2\sqrt{2}}$

**33.** $\sin\beta=\frac{-1}{\sqrt{10}},\ \cos\beta=\frac{-3}{\sqrt{10}},\ \tan\beta=\frac{1}{3},\ \csc\beta=-\sqrt{10},\ \sec\beta=-\frac{\sqrt{10}}{3}$

**34.** $\sin\theta=-\frac{3}{4},\ \cos\theta=\frac{\sqrt{7}}{4},\ \tan\theta=-\frac{3}{\sqrt{7}},\ \sec\theta=\frac{4}{\sqrt{7}},\ \cot\theta=-\frac{\sqrt{7}}{3}$

**35.** 5.73576 cm **36.** 19.15111 cm **37.** 24.62147 cm **38.** 57.48877 cm

**39.~58.** 생략

**59.** $\frac{4+6\sqrt{2}}{15}$ **60.** $\frac{8\sqrt{2}-3}{15}$ **61.** $\frac{3+8\sqrt{2}}{15}$ **62.** $\frac{4-6\sqrt{2}}{15}$

**63.** $\frac{24}{25}$ **64.** $\frac{7}{25}$ **65.** $\frac{\pi}{3},\ \frac{5\pi}{3}$ **66.** $\frac{\pi}{3},\ \frac{2\pi}{3},\ \frac{4\pi}{3},\ \frac{5\pi}{3}$

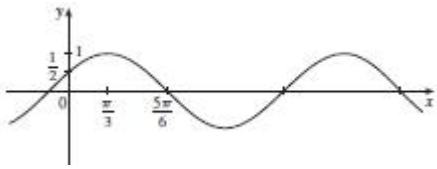
**67.** $\pi/4,\ 3\pi/4,\ 5\pi/4,\ 7\pi/4$ **68.** $\frac{3\pi}{4},\ \frac{7\pi}{4}$ 또는 $\frac{\pi}{4},\ \frac{5\pi}{4}$

**69.** $\pi/6,\ \pi/2,\ 5\pi/6,\ 3\pi/2$ **70.** $\frac{\pi}{2},\ \frac{3\pi}{2}$ **71.** $0,\ \pi,\ 2\pi$

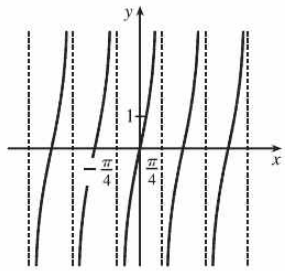
**72.** $0,\ 2\pi$ 또는 $\frac{\pi}{3},\ \frac{5\pi}{3}$ **73.** $0\le x\le\pi/6,\ 5\pi/6\le x\le 2\pi$

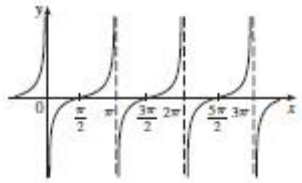
**74.** 생략 **75.** $0\le x<\frac{\pi}{4},\ \frac{3\pi}{4}<x<\frac{5\pi}{4},\ \frac{7\pi}{4}<x\le 2\pi$ **76.** 생략

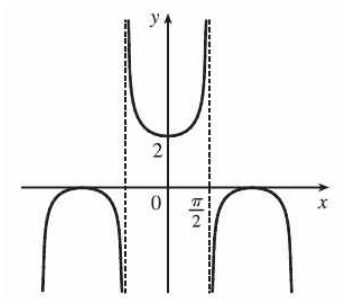
**77.**

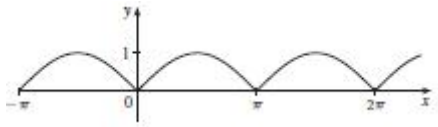


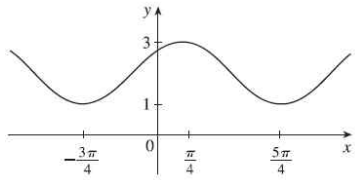

**78.**



79. 

80. 

81. 

82. 

83. 생략 **84.** 1355 m **85.~88.** 생략 **89.** $14.34457\,\mathrm{cm}^2$

**연습문제 B**

**01.** $\sqrt{1}+\sqrt{2}+\sqrt{3}+\sqrt{4}+\sqrt{5}$ **02.** $\frac{1}{2}+\frac{1}{3}+\frac{1}{4}+\frac{1}{5}+\frac{1}{6}+\frac{1}{7}$ **03.** $3^4+3^5+3^6$

**04.** $4^3+5^3+6^3$ **05.** $-1+\frac{1}{3}+\frac{3}{5}+\frac{5}{7}+\frac{7}{9}$ **06.** $x^5+x^6+x^7+x^8$

**07.** $1^{10}+2^{10}+3^{10}+\cdots+n^{10}$ **08.** $n^2+(n+1)^2+(n+2)^2+(n+3)^2$

**09.** $1-1+1-1+\cdots+(-1)^{n-1}$ **10.** 생략 **11.** $\sum_{i=1}^{10} i$ **12.** $\sum_{i=3}^{7} \sqrt{i}$

**13.** $\sum_{i=1}^{19} \frac{i}{i+1}$ **14.** $\sum_{i=3}^{23} \frac{i}{i+4}$ **15.** $\sum_{i=1}^{n} 2i$ **16.** $\sum_{i=1}^{n} (2i-1)$

**17.** $\sum_{i=0}^{5} 2^i$ **18.** $\sum_{i=1}^{6} \frac{1}{i^2}$ **19.** $\sum_{i=1}^{n} x^i$ **20.** $\sum_{i=0}^{n} (-1)^i x^i$ **21.** 80

**22.** 122 **23.** 3276 **24.** 1 **25.** 0 **26.** 400 **27.** 61

**28.** 63.5 **29.** $n(n+1)$ **30.** $-\frac{n(5n+1)}{2}$ **31.** $n(n^2+6n+17)/3$

**32.** $\frac{n(4n^2+24n+47)}{3}$ **33.** $n(n^2+6n+11)/3$ **34.** $\frac{n(n+1)(n+2)(n+3)}{4}$

**35.** $n(n^3+2n^2-n-10)/4$ **36.** 12 **37.~40.** 생략

**41.** (a) $n^4$ (b) $5^{100}-1$ (c) $\frac{97}{300}$ (d) $a_n-a_0$ **42.** 생략 **43.** $\frac{1}{3}$

**44.** $\frac{5}{4}$ **45.** 14 **46.** $\frac{195}{4}$ **47.** 생략 **48.** 생략

**49.** $2^{n+1}+n^2+n-2$ **50.** $\frac{nm}{2}(m+n+2)$