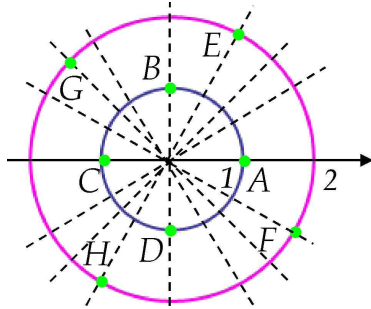


Section 5.1 연습문제

1~8.

 풀이



9~16

 풀이

9번 - 13번

10번 - 15번

11번 - 14번

12번 - 16번

17.

 풀이

$$\left(\sqrt{2}, \frac{7\pi}{4} \right)$$

18.

 풀이

$$\left(2, \frac{5\pi}{6} \right)$$

19.

 풀이

$$\left(2\sqrt{2}, \frac{5\pi}{4} \right)$$

20.

 풀이

$$\left(2\sqrt{2}, \frac{5\pi}{4} \right)$$

21.

 풀이

$$(1, \sqrt{3})$$

22.

 풀이

$$(-\sqrt{3}, 1)$$

23.

 $(\sqrt{2}, -\sqrt{2})$

24.

 $(1, \sqrt{3})$

Section 5.2 연습문제

1.

 $y = -\sqrt{3}x$

2.

 $r = x^2 + y^2 = 2$

3.

 $y = 1$

4.

 $x = 1$

5.

 $x\sqrt{x^2 + y^2} = y$

6.

 $r \cos \theta = x = 1$

7.

 $xy = 1$

8.

 $r^2(\cos^2 \theta - \sin^2 \theta) = x^2 - y^2 = 1$

9.

 $x^2 + y^2 = x + y$

10.

 $y = \ln x$

11.

 $r \cos \theta = 2$

12.

 $r \sin \theta = 2$

13.

 $\cos \theta = \sin \theta$

14.

 $\cos \theta = -\sin \theta$

15.

 $r^2 \sin 2\theta = 4$

16.

 $r^2 \cos^2 \theta - r^2 \sin^2 \theta = r^2 (\cos^2 \theta - \sin^2 \theta) = 2$

17.

 $r = 4 \sin \theta$

18.

 $r = 4 \cos \theta - 2 \sin \theta$

19.

 $r^2 (4 + 5 \cos^2 \theta) = 36$

20.

 $r^2 (9 \cos^2 \theta - 4 \sin^2 \theta) = 36$

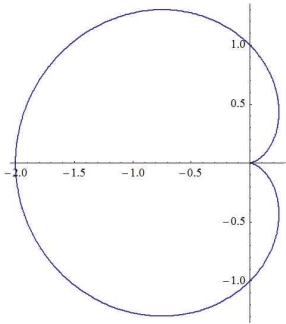
21.

 $x = 1$ 인 직 선

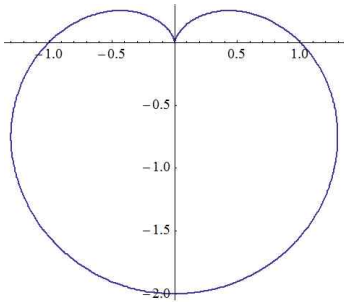
22.

 $x = 1$ 인 직 선

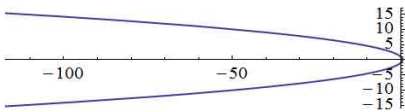
23.



24.

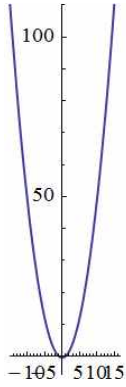


25.



26.

$\frac{\pi}{2}$ 이



29.

$\frac{\pi}{2}$ 이 $\left(1, \frac{\pi}{2}\right)$

30.

$\frac{\pi}{2}$ 이 $\left(\sqrt{3}, -\frac{\pi}{6}\right), \left(\sqrt{3}, \frac{\pi}{6}\right)$

31.

$\frac{\pi}{2}$ 이 $\left(1, -\frac{\pi}{2}\right), \left(1, \frac{\pi}{2}\right), \exists O$

32.

$\frac{\pi}{2}$ 이 $\left(1 + \frac{\sqrt{2}}{2}, \frac{\pi}{4}\right), \left(1 - \frac{\sqrt{2}}{2}, \frac{3\pi}{4}\right), \exists O$

33.

$\frac{\pi}{2}$ 이 $(4, 0), \left(4, \frac{\pi}{2}\right), (4, \pi), \left(4, \frac{3\pi}{2}\right) \circ$

34.

$\frac{\pi}{2}$ 이 $\left(1, \frac{\pi}{12}\right), \left(1, \frac{5\pi}{12}\right), \left(1, \frac{13\pi}{12}\right), \left(1, \frac{17\pi}{12}\right)$

65.

$\frac{\pi}{2}$ 이 $d = \sqrt{r_1^2 + r_2^2 - 2r_1r_2\cos(\theta_1 - \theta_2)}$

66.

 $d = |r_1 - r_2|$

67.

 $d = \sqrt{r_1^2 + r_2^2}$

68.

 $d = r_1 + r_2$

69.



(a) $r = 2 + \sec \theta = 2 + \frac{1}{\cos \theta}$ 이므로 $r \rightarrow \infty$ 이면 $\theta \rightarrow \left(\frac{\pi}{2}\right)^-$ 이고 $r \rightarrow -\infty$ 이면

$\theta \rightarrow \left(\frac{\pi}{2}\right)^+$ 이다.

$$\lim_{r \rightarrow \infty} x = \lim_{\theta \rightarrow (\pi/2)^-} (2 + \sec \theta) \cos \theta = \lim_{\theta \rightarrow (\pi/2)^-} (2 \cos \theta + 1) = 1$$

$$\lim_{r \rightarrow -\infty} x = \lim_{\theta \rightarrow (\pi/2)^+} (2 + \sec \theta) \cos \theta = \lim_{\theta \rightarrow (\pi/2)^+} (2 \cos \theta + 1) = 1$$

따라서 $r = 2 + \sec \theta$ 는 수직접근선 $x = 1$ 을 갖는다.

(b) $r = 2 + \operatorname{cosec} \theta = 2 + \frac{1}{\sin \theta}$ 이므로 $r \rightarrow \infty$ 이면 $\theta \rightarrow \pi^-$ 이고 $r \rightarrow -\infty$ 이면 $\theta \rightarrow \pi^+$ 이다.

$$\lim_{r \rightarrow \infty} y = \lim_{\theta \rightarrow \pi^-} (2 + \operatorname{cosec} \theta) \sin \theta = \lim_{\theta \rightarrow \pi^-} (2 \sin \theta + 1) = 1$$

$$\lim_{r \rightarrow -\infty} y = \lim_{\theta \rightarrow \pi^+} (2 + \operatorname{cosec} \theta) \sin \theta = \lim_{\theta \rightarrow \pi^+} (2 \sin \theta + 1) = 1$$

따라서 $r = 2 + \operatorname{cosec} \theta$ 는 수직접근선 $y = 1$ 을 갖는다.

Section 5.3 연습문제

1.

 $y = \frac{1}{\sqrt{3}}x + \sqrt{3} - \frac{1}{\sqrt{3}}$

2.

 $y = -\pi x - 1$

3.

 $y = \frac{\sqrt{3}}{7}x + \frac{1}{7}$

4.

 $y = -(1 + \sqrt{2})x + 2 + \frac{3}{\sqrt{2}}$

5.

 $y = x + \frac{5 - 3\sqrt{3}}{2}$

6.

 $y = -\frac{7}{3\sqrt{3}}(x - 16)$

7.



수평접선 : $\left(2, \frac{\pi}{2}\right), \left(\frac{1}{2}, \frac{7\pi}{6}\right), \left(\frac{1}{2}, \frac{11\pi}{6}\right)$

수직접선 : $\left(\frac{2 + \sqrt{3}}{2}, \frac{7\pi}{6}\right), \left(\frac{2 + \sqrt{3}}{2}, \frac{11\pi}{6}\right)$

8.



수평접선 : $\left(\frac{3}{2}, \frac{\pi}{3}\right), \left(\frac{3}{2}, \frac{5\pi}{3}\right)$

수직접선 : $(2, 0), \left(\frac{1}{2}, \frac{\pi}{3}\right), \left(\frac{1}{2}, \frac{4\pi}{3}\right)$

9.

$$\frac{\pi}{6} \text{이 } \tan^{-1} |3\sqrt{3}|$$

10.

$$\frac{\pi}{6} \text{이 } \tan^{-1} |-1| = \frac{\pi}{4}$$

11.

$$\frac{\pi}{6} \text{이 } S = \frac{3}{2}\pi$$

12.

$$\frac{\pi}{6} \text{이 } S = \frac{27}{2}\pi$$

13.

$$\frac{\pi}{6} \text{이 } S = \frac{\pi}{2}$$

14.

$$\frac{\pi}{6} \text{이 } S = 18\pi$$

15.

$$\frac{\pi}{6} \text{이 } S = 1$$

16.

$$\frac{\pi}{6} \text{이 } S = 1$$

17.

$$\frac{\pi}{6} \text{이 } S = \frac{8+\pi}{2}$$

18.

$$\frac{\pi}{6} \text{이 } S = \frac{3\sqrt{3}+2\pi}{6}$$

19.

$$\frac{\pi}{6} \text{이 } S = \pi + 3\sqrt{3}$$

20.

 $S = \pi + 3\sqrt{3}$

21.

 $S = 5\pi$

22.

 $S_1 = \frac{3\pi}{2} - 4$

23.

 $l = \frac{32}{3} \left[(1 + \pi^2) \sqrt{1 + \pi^2} - 1 \right]$

24.

 $l = 8$

25.

 $A_y = 2\pi\sqrt{2}$

26.

 $A_x = 2\pi(2 - \sqrt{2})$