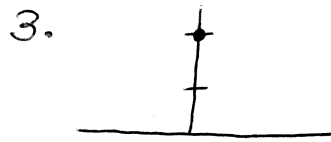
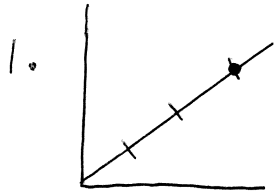
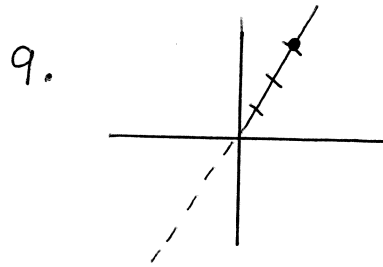
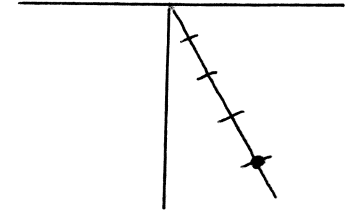


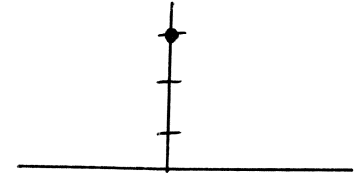
Polar Packet Practice Exercises - Section 7.1: 1-43 odd



5. $(4, -420^\circ) = (4, -60^\circ)$



11. $(3, 5\pi/2) = (3, \pi/2)$



13. $(3, 60^\circ), (3, -300^\circ), (-3, 240^\circ), (-3, -120^\circ)$

15. $(2, -210^\circ), (2, 150^\circ), (-2, -30^\circ), (-2, 330^\circ)$

17. $x = r \cos \theta \rightarrow x = 0 \cos 90^\circ = 0 \cdot 0 = 0$
 $y = r \sin \theta \rightarrow y = 0 \sin 90^\circ = 0 \cdot 1 = 0$ \rightarrow $\boxed{(0, 0)}$

19. $x = r \cos \theta \rightarrow x = 2 \cos 130^\circ = -1.286$
 $y = r \sin \theta \rightarrow y = 2 \sin 130^\circ = 1.532$ \rightarrow $\boxed{(-1.286, 1.532)}$

21. $x = r \cos \theta \rightarrow x = 3 \cos(-70^\circ) = 1.026$
 $y = r \sin \theta \rightarrow y = 3 \sin(-70^\circ) = -2.819$ \rightarrow $\boxed{(1.026, -2.819)}$

23. $r = \sqrt{0^2 + (-1)^2} = \sqrt{0+1} = \sqrt{1} = 1$
 $\theta = \tan^{-1}\left(\frac{y}{x}\right) \rightarrow \theta = \tan^{-1}\left(\frac{-1}{0}\right) = -\frac{\pi}{2}$ \rightarrow $\boxed{(1, -\pi/2)}$

25. $r = \sqrt{2^2 + (-2)^2} = \sqrt{4+4} = \sqrt{8} = 2\sqrt{2}$
 $\theta = \tan^{-1}\left(\frac{y}{x}\right) \rightarrow \theta = \tan^{-1}\left(\frac{-2}{2}\right) \rightarrow \theta = \tan^{-1}(-1) = -\pi/4$
 $\boxed{(2\sqrt{2}, -\pi/4)}$

$$27. r = \sqrt{(-3)^2 + \sqrt{3}^2} = \sqrt{9+3} = \sqrt{12} = 2\sqrt{3}$$

$$\theta = \tan^{-1}\left(\frac{y}{x}\right) \rightarrow \theta = \tan^{-1}\left(-\frac{\sqrt{3}}{3}\right) = -\pi/6$$

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

$$\left(2\sqrt{3}, 5\pi/6\right)$$

$$29. x=4 \rightarrow r\cos\theta = 4 \rightarrow r = \frac{4}{\cos\theta} \rightarrow \boxed{r = 4\sec\theta}$$

$$31. x^2 + y^2 = 36 \rightarrow (r\cos\theta)^2 + (r\sin\theta)^2 = 36 \rightarrow r^2\cos^2\theta + r^2\sin^2\theta = 36$$

$$r^2(\cos^2\theta + \sin^2\theta) = 36 \rightarrow r^2 \cdot 1 = 36 \rightarrow r^2 = 36 \rightarrow \boxed{r = \pm 6}$$

$$33. r = 10\sin\theta$$

$$r^2 = 10r\sin\theta \rightarrow x^2 + y^2 = 10y \rightarrow x^2 + y^2 - 10y + 25 = 25$$

$$\boxed{x^2 + (y-5)^2 = 25}$$

$$35. r = 6\csc\theta \rightarrow r = \frac{6}{\sin\theta} \rightarrow r\sin\theta = 6 \rightarrow \boxed{y = 6}$$

$$37. 4x^2 + 4y^2 = -3y$$

$$4r^2\cos^2\theta + 4r^2\sin^2\theta = -3r\sin\theta \rightarrow 4r^2(\cos^2\theta + \sin^2\theta) = -3r\sin\theta$$

$$4r^2 = -3r\sin\theta \rightarrow 4r = -3\sin\theta \rightarrow \boxed{r = -\frac{3}{4}\sin\theta}$$

$$39. y^2 + (x-6)^2 = 36 \rightarrow y^2 + x^2 - 12x + 36 = 36 \rightarrow r^2\sin^2\theta + r^2\cos^2\theta - 12r\cos\theta = 0$$

$$r^2(\cos^2\theta + \sin^2\theta) = 12r\cos\theta \rightarrow r^2 = 12r\cos\theta \rightarrow \boxed{r = 12\cos\theta}$$

$$41. r = \frac{1}{2+\sin\theta} \rightarrow 2r + r\sin\theta = 1 \rightarrow \boxed{2\sqrt{x^2+y^2} + y = 1}$$

$$43. r = 6\tan\theta\sec\theta \rightarrow r = \frac{6\sin\theta}{\cos\theta \cdot \cos\theta} \rightarrow r\cos\theta = \frac{6\sin\theta}{\cos\theta} \rightarrow x = 6\tan\theta$$

$$x = 6\frac{y}{x} \rightarrow x^2 = 6y \rightarrow \boxed{y = \frac{1}{6}x^2}$$