Chapter 10.2

3.(c) $\left(-6, -\frac{5\pi}{6}\right)$

$x = -6\cos\left(-\frac{5\pi}{6}\right) = 3\sqrt{3}$ $\quad y = -6\sin\left(-\frac{5\pi}{6}\right) = 3$

3.(f) $(-5, 0)$

$x = -5\cos 0 = -5$ $\quad y = -5\sin 0 = 0$

4.(b) $\left(6, -\frac{\pi}{4}\right)$

$x = 6\cos\left(-\frac{\pi}{4}\right) = 3\sqrt{2}$ $\quad y = 6\sin\left(-\frac{\pi}{4}\right) = -3\sqrt{2}$

4.(e) $\left(-4, -\frac{3\pi}{2}\right)$

$x = -4\cos\left(-\frac{3\pi}{2}\right) = 0$ $\quad y = -4\sin\left(-\frac{3\pi}{2}\right) = -4$

5.(a) $(-5, 0)$

$r = \sqrt{x^2+y^2} = \sqrt{(-5)^2+0^2} = 5$

$\tan\theta = \frac{y}{x} \Rightarrow \theta = \tan^{-1}\frac{0}{-5} = \pi, -\pi$

So, $(5, \pi)$ and $(5, -\pi)$

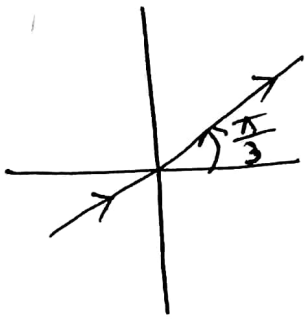
5(d) $(-8, -8)$

$r = \sqrt{(-8)^2 + (-8)^2} = \sqrt{2 \times 8^2} = 8\sqrt{2}$

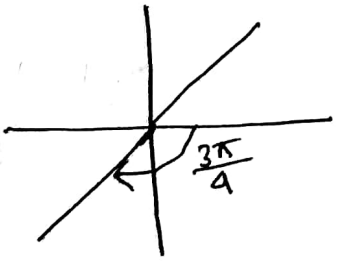
$\tan\theta = \frac{y}{x} = \frac{-8}{-8} \Rightarrow \theta = \frac{5\pi}{4}, -\frac{3\pi}{4}$

so, $(8\sqrt{2}, \frac{5\pi}{4})$ and $(8\sqrt{2}, -\frac{3\pi}{4})$

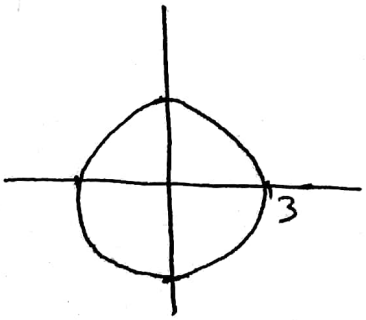
21. $\theta = \frac{\pi}{3}$



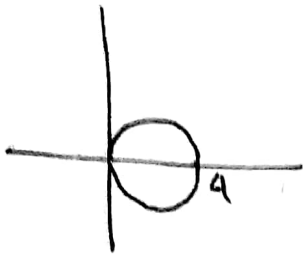
22. $\theta = -\frac{3\pi}{4}$



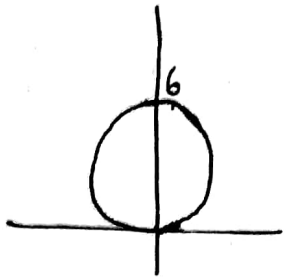
23. $r = 3$



24. $r = 9\cos\theta$

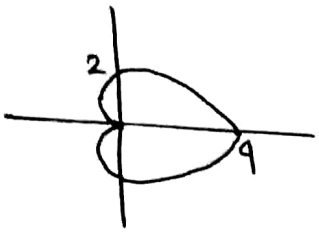


25. $r = 6\sin\theta$



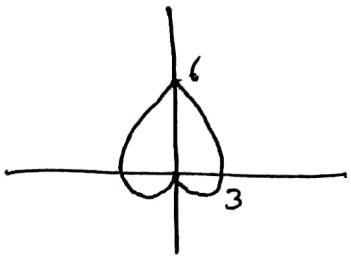
26. $r - 2 = 2\cos\theta$

$\Rightarrow r = 2 + 2\cos\theta$

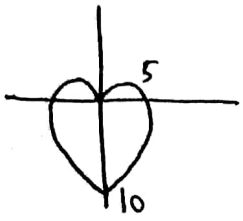


27. $r = 3(1 + \sin\theta)$

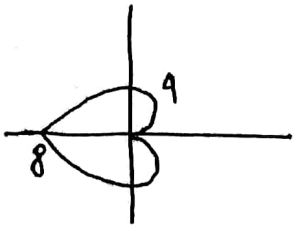
$\Rightarrow r = 3 + 3\sin\theta$



28. $r = 5 - 5\sin\theta$



29. $r = 4 - 4\cos\theta$



30. $r = 1 + 2\sin\theta$

$\frac{a}{b} = \frac{1}{2} < 1$