Problem Set #59

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Problem 6

(a) $r = 2 \implies \sqrt{x^2 + y^2} = 2 \implies x^2 + y^2 = 4$

Circle

(b) $r = 3\sin\theta \implies r^2 = 3r\sin\theta \implies x^2 + y^2 = 3y$

Circle

(b) $r = \csc\theta \implies r = \dfrac{1}{\sin\theta} \implies r\sin\theta = 1 \implies y = 1$

Horizontal line

Problem 7

(a) $x = 3 \implies r\cos\theta = 3 \implies \boxed{r = 3\sec\theta}$

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

$\implies \boxed{r = -\cos\theta\csc^2\theta}$

(b) $x^2 + y^2 = 2cx \implies r^2 = 2cr\cos\theta \implies \boxed{r = 2c\cos\theta}$

Problem 10

(a) V

(b) II

(c) VI

(d) III

(e) I

(f) IV