1) $r = 5$

$\sqrt{x^2+y^2} = 5$

$x^2+y^2 = 25$

2) $r = 10\sin\theta$ $\quad * r$

$r^2 = 10r\sin\theta$

$x^2+y^2 = 10y$

3) $r = \dfrac{5}{1+\cos\theta}$

$r + r\cos\theta = 5$

$\sqrt{x^2+y^2} + x = 5$

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

$x^2+y^2 = 25 - 10x + x^2$

$y^2 = 25 - 10x$

4) $r = \cos\theta$ $\quad * r$

$r^2 = r\cos\theta$

$x^2+y^2 = x$

5) $r = 2(\sin\theta - \cos\theta)$ $\quad * r$

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

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

6) $r = 8\csc\theta$

$r = \dfrac{8}{\sin\theta}$

$r\sin\theta = 8$

$y = 8$

7) $r = \dfrac{5}{\cos\theta - \sin\theta}$

$r\cos\theta - r\sin\theta = 5$

$x - y = 5$

8) $r - 2\sin\theta = 3\cos\theta$ $\quad * r$

$r^2 - 2r\sin\theta = 3r\cos\theta$

$x^2+y^2 - 2y = 3x$

9) $r\sin\theta = 10$

$y = 10$

10) $r = 4\cot\theta\csc\theta$

$r = 4\dfrac{\cos\theta}{\sin\theta}\dfrac{1}{\sin\theta}$

$r\sin^2\theta = 4\cos\theta$ $\quad * r$

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

$y^2 = 4x$

11) $r^2\sin 2\theta = 36$

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

$2r\sin\theta \cdot r\cos\theta = 36$

$2y \cdot x = 36$

$y = \dfrac{18}{x}$

12) $r = \dfrac{5}{4\sin\theta + 3\cos\theta}$

$4r\sin\theta + 3r\cos\theta = 5$

$4y + 3x = 5$

13) $x^2+y^2=144$

$r^2=144$

$r=12$ or $r=-12$

14) $y=11$

$r\sin\theta=11$

$r=11\csc\theta$

15) $x^2+y^2-4x=0$

$r^2-4r\cos\theta=0 \quad \div r$

$r=4\cos\theta$

16) $x^2+4y^2=4$

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

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

17) $x^2-y^2=4$

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

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

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

18) $xy=1$

$r\cos\theta\cdot r\sin\theta=1$

$r^2\cos\theta\sin\theta=1$

or

$r^2(\sin 2\theta)=1$

19) $(x-12)^2+(y+3)^2=144$

$x^2-24x+144+y^2+6y+9=144$

$x^2+y^2-24x+6y=-9$

$r^2=24r\cos\theta+6\sin\theta+9=0$

20) $x^2+(y-16)^2=256$

$x^2+y^2-32y+256=256$

$r^2-32r\sin\theta=0 \quad \div$

$r=32\sin\theta$