Trig Polar 6.3B Worksheet
Equation Conversions

Name Key Date _____ out of 25

Write each rectangular equation in polar form.

1) $x^2 + y^2 = 9$

$r = \pm 3$

2) $y = 3$

$r\sin\theta = 3$

$r = 3/\sin\theta = 3\csc\theta$

3) $x = 5$

$r\cos\theta = 5$

$r = 5/\cos\theta = 5\sec\theta$

4) $x^2 - y^2 = 1$

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

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

5) $x^2 + y^2 - 2y = 0$

$r^2 - 2r\sin\theta = 0$

$r = 2\sin\theta$

6) $3x + y = 7$

$3r\cos\theta + r\sin\theta = 7$

$r(3\cos\theta + \sin\theta) = 7$

$r = 7/(3\cos\theta + \sin\theta)$

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

$r = \pm 4$

8) $(x - 2)^2 + y^2 = 4$

$x^2 - 4x + 4 + y^2 = 4$

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

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

$r - 4\cos\theta = 0$

$r = 4\cos\theta$

9) $y^2 = 6x$

$r^2\sin^2\theta = 6r\cos\theta$

$r\sin^2\theta = 6\cos\theta$

$r = 6\cos\theta/\sin^2\theta$

10) $y = 2x$

$\theta = \tan^{-1}(2)$

$\theta = 63^\circ$ or 1.1

11) $y = -x$

$\theta = 7\pi/4$ or $-\frac{\pi}{4}$

Write each polar equation in rectangular form.

12) $r = 16$

$x^2 + y^2 = 256$

13) $\theta = \pi/3$

$y = \sqrt{3}x$

14) $r\cos\theta = 5$

$x = 5$

15) $r\sin\theta = 17$

$y = 17$

16) $r = 3\sec\theta$

$r\cos\theta = 3$

$x = 3$

17) $r = -8\csc\theta$

$r\sin\theta = -8$

$y = -8$

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18) $\theta = \pi/7$

$y = .48x$

19) $r = \sin\theta$

$r^2 = r\sin\theta$

$x^2 + y^2 = y$

20) $r = \cos\theta$

$r^2 = r\cos\theta$

$x^2 + y^2 = x$

21) $r = 12\cos\theta$

$r^2 = 12r\cos\theta$

$x^2 + y^2 = 12x$

22) $r = 6\cos\theta + 4\sin\theta$

$r^2 = 6r\cos\theta + 4r\sin\theta$

$x^2 + y^2 = 6x + 4y$

23) $r = 8\cos\theta + 2\sin\theta$

$r^2 = 8r\cos\theta + 2r\sin\theta$

$x^2 + y^2 = 8x + 2y$

24) $r^2\sin 2\theta = 2$

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

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

$yx = 1$

$xy = 1$

or

$y = 1/x$

25) $\theta = 72°$

$y = \tan 72° x$

$y = 3.08x$