


Pre-Calculus 31, 37

Questions over 9.6a???????

$(3, -2)$ 

$r = \sqrt{3^2 + (-2)^2} = \sqrt{13}$

$\theta = \tan^{-1}\left(\frac{-2}{3}\right) + 360$

$= 326^\circ \times \frac{\pi}{180}$

$= 5.69$

$\begin{matrix} 6.28 \\ -5.69 \\ \hline -5.93 \end{matrix}$

$(\sqrt{13}, 5.69)$

$(\sqrt{13}, -5.9)$

Nov 17-4:15 PM

Converting Equations $x = r \cos \theta$
 $y = r \sin \theta$

Example

Convert $x + y = 6$ to polar form. Answer should be in the form "r=..."

$x + y = 6$

$r \cos \theta + r \sin \theta = 6$

$\frac{r(\cos \theta + \sin \theta)}{\cos \theta + \sin \theta} = \frac{6}{\cos \theta + \sin \theta}$

$r = \frac{6}{\cos \theta + \sin \theta}$

p. 712, #45 (HW)

Jan 3-2:05 PM

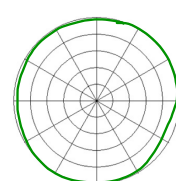
Converting Equations Continued

Example $r^2 = x^2 + y^2$

Convert from polar to rectangular: $r = 5$

$r^2 = 5^2$

$x^2 + y^2 = 25$



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Converting Equations Continued

Example

Convert from polar to rectangular: $\theta = \frac{\pi}{4}$

$\tan \theta = \frac{y}{x}$

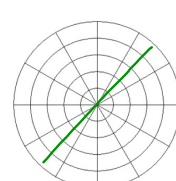
$\tan \frac{\pi}{4} = \frac{y}{x}$

$x = \frac{y}{x} \cdot x$

$x = y$

or

$y = x$



Jan 3-2:07 PM

Converting Equations Continued**Example**Convert from polar to rectangular: $r = 4\cos\theta$

$$r = 4\cos\theta$$

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

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

p. 712, #61 (HW)

Jan 3-2:07 PM

Converting Equations Chart**From rectangular to polar** $(x, y) \rightarrow (r, \theta)$

$$x = r\cos\theta$$

$$y = r\sin\theta$$

solve for r **From polar to rectangular** $(r, \theta) \rightarrow (x, y)$ Only r 's: Square both sides $r^2 = x^2 + y^2$ Only θ 's: $\tan\theta = \frac{y}{x}$

A bit of both:

Creative
Try x both sides by r

Jan 3-2:40 PM

HOMEWORK

buh-buh-buh-burrrrr (polar coordinates)

9.6 (p. 711): 1-17 (every other odd), 21, 23, 31, 33, 37, 39,

43-49 (odd), 61, 65, 69

Jan 3-2:16 PM