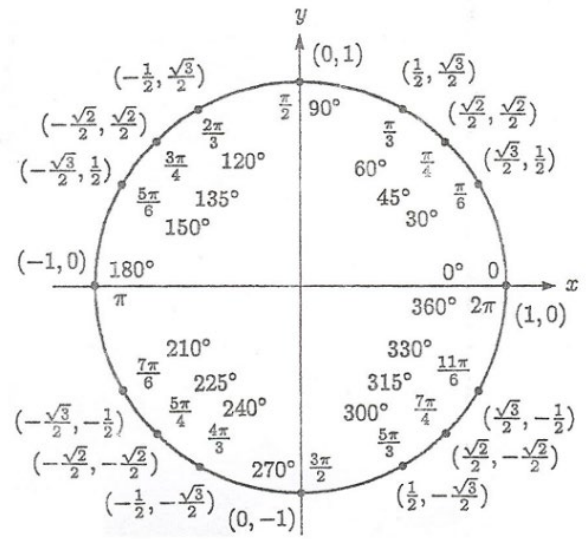
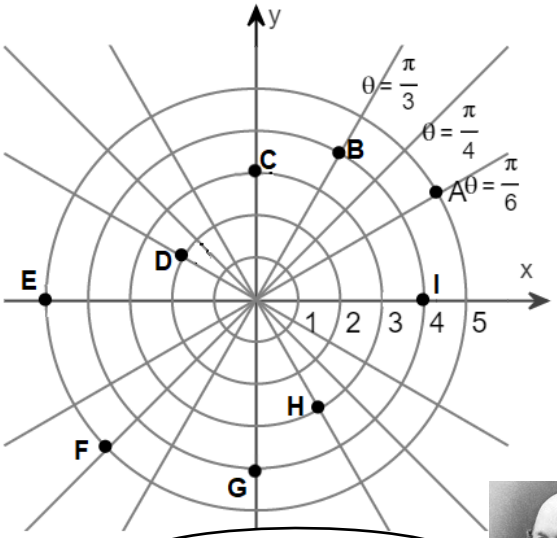
The Plot of a Complex Number *z*, Its Rectangular Form, Its Polar Form and More





$r\text{cis}\,\theta = r(\cos\theta + i\sin\theta)$

Washington Irving Stringham

1. Write a pair of polar coordinates (r, θ) and a pair of rectangular coordinates (x, y) for the points **A** through **I**. ***Give exact values.*** ***Report θ in radians please.*** Utilize the unit circle for efficiency. No trig function should be in your answer. Do not report decimal answers. Only one polar coordinate need be reported.
Then report the complex number z in both rectangular for $x + yi$ and polar form $r\text{cis}\,\theta$.

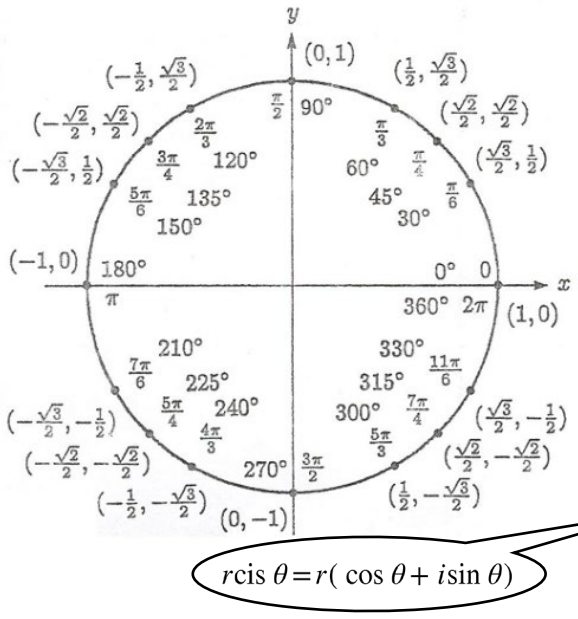
A. $r =$ ____, $\theta =$ _____ and $x =$ _____, $y =$ _____ $z =$ ____ + _____ i = _____ cis(___)

B. $r =$ ____, $\theta =$ _____ and $x =$ _____, $y =$ _____ $z =$ ____ + _____ i = _____ cis(___)

C. $r =$ ____, $\theta =$ _____ and $x =$ _____, $y =$ _____ $z =$ ____ + _____ i = _____ cis(___)

D. $r =$ ____, $\theta =$ _____ and $x =$ _____, $y =$ _____ $z =$ ____ + _____ i = _____ cis(___)

E. $r =$ ____, $\theta =$ _____ and $x =$ _____, $y =$ _____ $z =$ ____ + _____ i = _____ cis(___)



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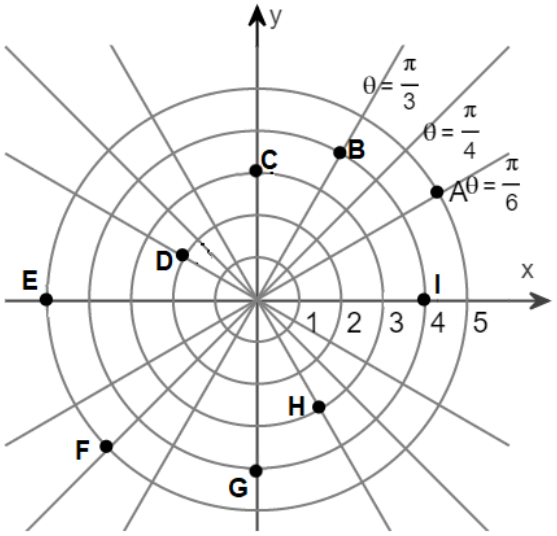

F. $r =$ ____, $\theta =$ _____ and $x =$ _____, $y =$ _____ $z =$ ____ + _____ i = _____ cis(___)

G. $r =$ ____, $\theta =$ _____ and $x =$ _____, $y =$ _____ $z =$ ____ + _____ i = _____ cis(___)

H. $r =$ ____, $\theta =$ _____ and $x =$ _____, $y =$ _____ $z =$ ____ + _____ i = _____ cis(___)

I. $r =$ ____, $\theta =$ _____ and $x =$ _____, $y =$ _____ $z =$ ____ + _____ i = _____ cis(___)

2. Express in the polar coordinates. There are many correct answers. Only one is required. ***Give exact values***. No decimal answers please.Report θ in radians please. Utilize the unit circle for efficiency. No trig function should be in your answer.
For θ please choose from multiples of π/6, π/4, and π/3.

$x =$ 4, $y = -4$ is $r =$ ____, $\theta =$ _____ $z =$ ____ + _____ i = _____ cis(___)

$x = -\sqrt{3}, y = 0$ is $r =$ ____, $\theta =$ _____ $z =$ ____ + _____ i = _____ cis(___)