Name:

Homework 3, due Wed 9/4/2013.

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(1) Evaluate the following in the rectangular form (i.e. Real + j Imag):

a) $z = 4e^{j\pi/3}$
b) $z = 6e^{-j\pi/2}$
c) $z = j^3$
d) $z = (1-j)^3$
e) $z = (1-j)^{1/2}$

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(2) If z = -2 + j4, determine the following in polar form (i.e. $Ae^{j\phi}$)

a) 1/z
b) z^3
c) $|z|^2$
d) $z^{1/2}$
e) Im (z)
f) Im (z*)

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(3) Find the phasors of the following time functions:

a) $y(t) = 3\cos(\omega t - \pi/3)$
b) $y(t) = 12\sin(\omega t + \pi/4)$
c) $y(t) = 2e^{-3x}\sin(\omega t + \pi/6)$
d) $y(t) = -2\cos(\omega t + 3\pi/4)$
e) $y(t) = 4\sin(\omega t + \pi/3) + 3\cos(\omega t - \pi/6)$

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(4) Find the instantaneous time sinusoidal functions corresponding to the following phasors:

a) $\tilde{V} = -5e^{j\pi/3}$
b) $\tilde{V} = j6e^{-j\pi/4}$
c) $\tilde{I} = 6+j8$
d) $\tilde{I} = -3+j2$
e) $\tilde{I} = j$
f) $\tilde{I} = 2e^{j\pi/6}$