1. Using your calculator (the one you will use on EE223 tests) find:

   a) 2+j6 in polar degree form

   ★ Assuming TI-89. mode "exact/approx" to approx
   Put mode "Complex format" to polar and "angle" to degrees $2+j6 \Rightarrow \boxed{6.32 \angle 71.6^\circ}$

   b) $2\angle\frac{\pi}{6}$ in rectangular form

   Put mode "Complex format" to rectangular and "angle" to radians $(2\angle\pi\div 6) \Rightarrow \boxed{1.73+i}$

   c) $\frac{5\angle -4^\circ}{1+j3}$ in polar degree form

   Put mode "Complex format" to polar and "angle" to degrees $(5\angle(-)30)\div(1+j3) = \boxed{1.58\angle -10.1^\circ}$

   d) $2\angle 0.7$ in complex exponential form (easy!)

   $\boxed{2e^{j0.7}}$ by inspection

2. Find 2 cos (6t) – 3 sin (6t) in A cos (ωt + θ) form using trigonometry

$A\cos(\omega t) - B\sin(\omega t) = C\cos(\omega t + \theta)$

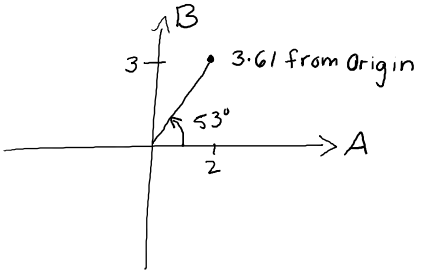
here, $A=2$, $B=3$, $\omega=6$

$C = \sqrt{A^2+B^2} = \sqrt{13} \approx 3.61$

$\theta = \tan^{-1}(B/A)\{+180^\circ \text{ if } A<0\} = \tan^{-1}(3/2) = 56.3^\circ$

$\boxed{3.61\cos(6t+56.3^\circ)}$

or, visualize



3. Do the above but use <u>phasors</u> (and calculator)

$2\cos(6t) - 3\sin(6t) = 2\cos(6t) - 3\cos(6t-90^\circ)$ (functions of time)

as phasors $\Rightarrow 2\angle 0^\circ - 3\angle -90^\circ$ (complex #'s)

Calculator says this is $= 3.61\angle 56.3^\circ$

So, $= \boxed{3.61\cos(6t+56.3^\circ)}$ ★ Same answer as above, <u>LOTS</u> easier!