EE 213 Practice Problems
Complex Numbers and Complex Sources

1. Transform the following sinusoidal time functions into the complex exponential form and then into the phasor form.

   a) $v(t) = 10\cos(120t-225°)$ Volts

   b) $i(t) = 5\sin(600t-125°)$ Amps

   c) $v(t) = -3\sin(20t)$ Volts

   d) $i(t) = -10\cos(2t+45°)$ Amps

2. Evaluate the following expressions and transform them into the sinusoidal time representation. Your final answer should be in the following form: $f(t) = A\cos(\omega t+\varphi)$. For each answer below, the angular frequency is 5 rad/s.

   a) $6\angle 25° + 10\angle -40°$

   b) $(5\angle 80°)(2+j4)$

   c) $(-1-j8) + (6-j5)$

   d) $(2\angle 140°) + (3-j6)$

   e) $\dfrac{(-4+j3)}{2\angle 10°}$

   f) $\dfrac{10\angle -25°}{(-2+j10)}$