EECS 360
Homework #1

1. Concept questions 2.1.1

2. Participation activities
   2.2.1: Phase angles and quadrants in the complex plane.
   2.2.2: Complex number products and quotient
   2.2.3: Complex algebra

3. Let

   a. $z_1 = 4+j\,2$ find
   $\mathrm{Re}(z_1)$, $\mathrm{Im}(z_1)$, $|z_1|$, $|z_1|^2$, find $\alpha$ and $\beta$ in $z_1 = \alpha e^{j\beta}$

   b. Repeat a. for $z_2 = -4 - j\,3$

Hint: see https://www.intmath.com/complex-numbers/convert-polar-rectangular-interactive.php

4. Let $z_1 = 4+j\,2$
   a. Find $x(t) = \mathrm{Re}[z_1 e^{-j2\pi 100t}]$
   b. For $z_2 = 2e^{j\pi/4}$ find $y(t) = \mathrm{Re}[z_2 e^{-j2\pi 100t}]$

5. Section 2.3 Participation activities
   2.3.1: Time shift
   2.3.2: Time shift
   2.3.3: Time scale transformation
   2.3.4: Time scale transformation
   2.3.5: Time scale.
   2.3.7: Time reversal
   2.3.9: Multiple transformations
   2.3.11: Combined transformations

6. Exercise 2.3.11

7. Section 2.4 Participation activities
   2.4.1 Odd and even symmetric components of a sine-pulse signal.
   2.4.2 Even/odd symmetry
   2.4.3 Even/odd symmetry, scaling, and time-shifting.
   2.4.7 Determining period
   2.4.9 Periodicity after linear transformations.

8. Exercise 2.4.1

9. Exercise 2.4.5 a

10. Exercise 2.4.6 a