Please turn in solutions for the following problems:

(1) Let $f(z) = e^z$. Compute each value. (Round to an appropriate number of decimal places if needed).
   (a) $f(-1 + i\pi)$

   (b) $f(\pi/2)$

(2) Consider the function $f(z) = e^z$, and let $S$ be the vertical line $\mathrm{Re}(z) = -1$. Sketch the image set $f(S)$.

(3) Let $f(z) = \mathrm{Log}(z)$. Compute each value. (Write in terms of $\pi$ if possible, but otherwise, round to an appropriate number of decimal places if needed).
   (a) $f(\sqrt{3} - i)$

   (b) $f(-4 + 4i)$

(4) Consider the function $f(z) = \mathrm{Log}(z)$, and let $S$ be the right half-circle of radius 1 centered at 0. That is, $S = \{z \in \mathbb{C} \mid |z| = 1 \text{ and } \mathrm{Re}(z) \geq 0\}$. Sketch the image set $f(S)$.

(5) Let $f(z) = \sin(z)$. Compute each value. (Round to an appropriate number of decimal places if needed).
   (a) $f(i\pi)$

   (b) $f(\pi/2 - i\pi/2)$

In addition, I suggest that you work these problems from the Brown/Churchill textbook (but do not turn in):
   • Page 33, problems 1, 2, 3
   • Page 44, problems 3, 4, 7
   • Page 92, problems 1, 8
   • Page 97, problems 1, 2, 7