

Homework #2 (Math 300):

- (1) §1.4 :
 - (a) #2(b, c)
 - (b) #4(b, c)
 - (c) #12(a)
 - (d) #15(a, b)
- (2) Find all values of $(1 - i)^{1/2}$ and $(1 - i)^{3/2}$ (Note: by definition, for positive integers p and q , a value of $z^{p/q}$ is a number w such that $w^q = z^p$).
- (3) §1.6: #2, #3, #4 (only for sets a, c and f)
- (4) For the function $f(z) = \frac{1}{z}$ and each of the following domains D , sketch D and the image of D :
 - (a) $D = \{z : 2 < |z| < 3\}$.
 - (b) $D = \{z : \pi/4 < \text{Arg}(z) < \pi/2\}$.
- (5) Find the real and imaginary parts, $u(x, y)$ and $v(x, y)$, of the following functions:
 - (a) $f(z) = z^3$.
 - (b) $g(z) = \frac{e^z}{z}$.