

MATH 342 HOMEWORK 7, SPRING 2018

DUE AT THE BEGINNING OF CLASS ON TUESDAY, MARCH 20.

One goal for this course is for you to develop your skill in effectively communicating mathematics. With this in mind, you should clearly write up your solutions. Solutions with little or no justification will receive little or no credit.

1.

- (1) Please read at least through section 43 in the Churchill and Brown textbook.
- (2) Recall that a *parameterized curve* is a (continuous) map $[a, b] \rightarrow \mathbb{C}$ from a closed interval in \mathbb{R} into the complex plane. The set of points $(x, y) \in \mathbb{C}$ making up the image of this map is called an *arc*. In class on Tuesday we gave several parameterizations of the unit circle $|z| = 1$.
 - (a) Write two different parameterizations of the unit circle $|z| = 1$, and in each case indicate the direction that the unit circle is traversed.
 - (b) Sketch the arc defined by the parameterization $z(t) = 2i + e^{it}$, $t \in [0, 2\pi]$.
 - (c) Sketch the arc defined by $z(t) = (1 + i) + 2e^{2\pi ti}$, $t \in [0, 1]$.
 - (d) Sketch the arc defined by

$$z(t) = \begin{cases} i(1-t) + t, & 0 \leq t \leq 1 \\ (2-t) - i(1-t), & 1 \leq t \leq 2, \end{cases}$$

and briefly explain how the arc is traversed.

- (3) Please do the problem 42.2 a,b,d from Churchill and Brown, (9th edition):
- (4) Please have a safe and enjoyable week!