

TMATH 126: Quiz 2

You may use:

- any kind of calculator that cannot access the internet and
- a double-sided 3×5 " card for this quiz.

Show *all* your work (numerically, algebraically, or geometrically) for each and simplify. No credit is given without supporting work.

1. [6] TRUE/FALSE: Circle T in each of the following cases if the statement is *always* true and provide a brief justification. Otherwise, circle F and provide a counterexample.

T F The complex number $1.5 + i\frac{3\sqrt{3}}{2}$ is written in polar form as $3e^{i\frac{2\pi}{3}}$

T F If the sequence a_n converges to zero, then Σa_n converges.

2. [4] Create an example function (either algebraically or graphically) and choose an initial value such that Newton's method will fail to converge to the closest root. Explain precisely how Newton's method will fail.

3. [5] Create a *series* that will converge to 3.

Hint: we only know one type of series whose limit can be computed with a formula...

4. (WebHW4 #9) The n th partial sum of a series $\lim_{n \rightarrow \infty} a_n$ is $s_n = \frac{2n - 1}{3n + 1}$.

(a) [2] Find $\lim_{n \rightarrow \infty} a_n$

(b) [3] Find a formula for a_n .