

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.

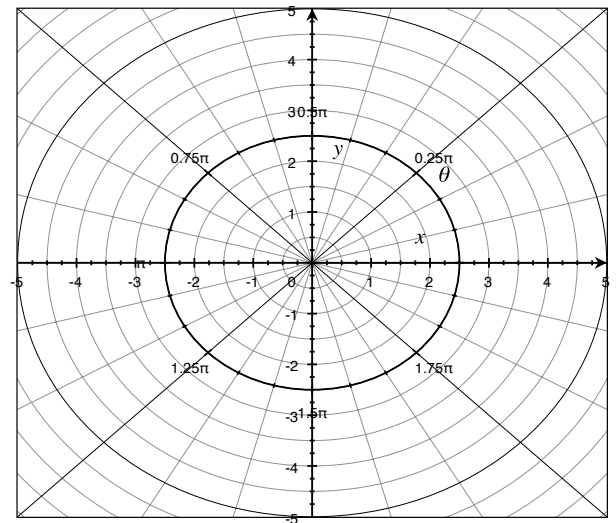
Show *all* your work (numerically, algebraically, or geometrically) for each and simplify. No credit is given without supporting work.

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 If $\lim_{n \rightarrow \infty} a_n = 0$, then $\sum_{n=1}^{\infty} a_n = 0$.

T F $\sum_{n=1}^{\infty} \frac{e^n}{3^{n+1}}$ converges to $\frac{e}{9 - 3e}$.

2. Consider the point $P = 2\sqrt{3} + 2i$ on the complex
(a) (ApxH #26) [3] Write the point P in polar coordinates and plot it on the axis provided.



- (b) (WebHW3 #9) [2] Find P^{15} and simplify.
(You can report the point P^{15} in which ever coordinate system you like.)

3. [4] (§4.8 #3) Suppose the tangent line to the curve $y = f(x)$ at the point $(2, 5)$ also passes through the point $(4, -1)$. If Newton's method is used to locate a root of the equation $f(x) = 0$ and the initial approximation is $x_1 = 2$, find the second approximation x_2 .

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 .