Panel 8

Homework:

1. Show that $f(z) = \cos(z)$ is not bounded (a) using Liouville's theorem and (b) directly from the definition.

2. Let $f(z) = z^2$ and R be the rectangular region $R = \{z = x+iy : 2 \le x \le 3 \text{ and } 1 \le y \le 3\}$. Find the max. of $|f(z)|$ for $z \in R$

3. Take f to be analytic in $\{|z| \le 5\}$ (disk) and assume that $|f(z)| \le 10$ for $z \in C_3(1)$. Find
   a) a bound for $|f^{(4)}(1)|$
   b) a bound for $|f^{(4)}(0)|$

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Panel 9

Homework (2)

(4) Let $f(z)$ be an entire function such that $|f(z)| \le M|z|$ for all z. Show that $f(z) = az$ for some constant a.

(5) Let f be entire such that $|f(z)| \ge 1$ for all z. Show that f must be constant.