Math 407-500 Quiz 2 Spring 2008

Complex Variables

Instructions Please write your name in the upper right-hand corner of the page. Circle the correct answer. No explanation is required.

1. The set of complex numbers z such that $|z - i|^2 = 4$ represents a circle in the plane. `True` `False`

2. The inequality $|z| + |w| \leq |z + w|$ holds for all complex numbers z and w. `True` `False`

3. There are exactly five complex numbers z such that $z^5 = 7 - 2i$. `True` `False`

4. The set of complex numbers z such that $\mathrm{Re}(z^2) = 0$ represents a vertical line in the plane. `True` `False`

5. An open disc in the plane is a connected set. `True` `False`

6. The set of complex numbers z such that $\mathrm{Re}(z) \geq 0$ is a closed set. `True` `False`

7. The function $f(z) = \overline{z}$ is a continuous function. `True` `False`

8. $\lim_{n\to\infty} \dfrac{1}{(1+i)^n} = 0$. `True` `False`

9. There is no complex number z for which $e^z = 0$. `True` `False`

10. The inequality $|\sin(z)| \leq 1$ holds for every complex number z. `True` `False`