Limits and Continuity- HW Problems

1. Evaluate the following limits.

a. $\lim_{z \to -i} (z - \frac{1}{z})$

b. $\lim_{z \to \infty} \frac{z^3}{1+3z^3}$

c. $\lim_{z \to \infty} \frac{z^2}{1+3z^3}$

2. Where are the following functions continuous?

a. $f(z) = z^3 + 2z^2 - 3$

b. $g(z) = \frac{z}{z^2+1}$

c. $h(z) = \frac{z^3-z+7}{z^4-1}$