$n = 6k-1$

$$a_n = \frac{(6k-1)^2 - 1}{(6k-1)^2 + 1} \sinh\left(\frac{(6\pi k - 1)\pi i}{3}\right)$$

$$= \frac{1 - 1/(6k-1)^2}{1 + 1/(6k+1)^2} \sinh\left(-\frac{\pi i}{3}\right) \to -\frac{\sqrt{3}}{2}$$

subsequences do not converge to same limit $\therefore$ sequence not convergent

b) i) Domain $iz + 5 \neq 0 \Rightarrow iz \neq -5$

$\Rightarrow z \neq 5i$

ii) $f(z) = \dfrac{(iz+5)(-iz-5)}{iz+5}$

$\lim_{z \to 5i} f(z) = -iz-5$, continuous

~~Any neighbourhood~~

$f(5i) = -i(5i) - 5 = 0$

$f(5i + 1/k) = -i(5i + 1/k) - 5 = -\frac{i}{k}$

Any neighbourhood of 0 contains