Exercises

Show that

(1) $\displaystyle\lim_{z\to\infty} \frac{3z^4 + 2z^2 - z + 1}{z^4 + 1} = 3.$

(2) $\displaystyle\lim_{z\to\infty} \frac{z^{12} - 42z}{z^8 + 17z} = \infty.$

(3) $\displaystyle\lim_{z\to -i} \frac{a}{(z+i)^2} = \infty,$ if $a \neq 0.$