

For full credit, you must show all work and circle your final answer.

- 1 Use Polynomial division to find $\frac{f(x)}{g(x)}$. Is $g(x)$ a factor of $f(x)$?
 $f(x) = x^3 + 3x^2 - x - 3$ and $g(x) = x + 1$

- 2 For the complex numbers x, y compute $x + y, x - y, x * y$:
 $x = 2 + i$ and $y = 3 + 4i$

- 3 Find the vertical asymptote of $f(x)$, and sketch the graph. (Don't forget about the y-intercept!)
 $f(x) = \frac{1}{x+3}$