

Problem Solving with Calculators

1. Factor $2x^4 + x^3 - 4x^2 - 10x - 4$ over \mathbb{C} . (Hint: use a calculator to graph this polynomial.)

2. Use a calculator to study the following limit: $\lim_{t \rightarrow 0} \frac{\sqrt{t^2 + 9} - 3}{t^2}$.

First calculate the exact value of the limit (by hand).

Try smaller and smaller values of t . What does the quotient in the limit approach?

Graph the function in the limit and zoom in around 0 (a few times, until something weird happens). What graph do you get? Explain why this happens.