Quiz 7A: Complex zeros, rational functions

FALL 2017

NAME:

1. (10 points) Define $f(x) = x^4 - 2x^3 + 9x^2 - 18x$. One zero of this function is $x = 3i$. Find all remaining zeros, both real and complex.

2. Consider the rational function.

$$R(x) = \frac{2x^2 - 8x}{x^2 - 2x - 3}$$

(a) Analyze the ratio of leading terms to find the end behavior. If the function has a horizontal asymptote or a slant asymptote, give its equation.

(b) Find the x-intercepts of the graph, if any.

(c) Find the equations for the vertical asymptotes, if any.

(d) Give the x-coordinates for any holes that you identify.

(e) Based on your work on the previous parts, give the $x-$ and y-coordinates for an appropriate selection of test points.

(f) Graph the function