

Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

Show your work

Find all the zeros and write the equation of the polynomial in factored form.

1)  $f(x) = x^4 - x^3 - 9x^2 + 3x + 18$  given  $x = \sqrt{3}$

2)  $f(x) = x^3 - x^2 + 16x - 16$  given  $x = 4i$

Write the equation of the polynomial in standard form given the zeros

3)  $x = 4, 6i$

4)  $x = -5, -3i, -2$

5) Write the equation of the polynomial in factored form and sketch the graph

$x = 2$  with multiplicity 2  
 $x = 1$  with multiplicity 1  
 $x = -4$  with multiplicity 3  
LCE is negative

Use a calculator to find a starting zero. Prove this is a zero using long or synthetic division. Find the remaining zeros using an appropriate method.

6)  $f(x) = 9x^3 - 15x^2 + 11x - 5$

7)  $f(x) = 6x^3 + 29x^2 - 45x - 200$

8)  $f(x) = 27x^4 - 39x^3 - 274x^2 - 64x + 224$