HW 4-2 Name: _____

Finding Complex Zeros and Writing Polynomials from all Zeros

#1-4: Using your graphing calculator, determine the number of complex zeros, real zeros and non-real zeros in the polynomial.

1. $x^4 - 3x^3 + 26x^2 - 108x - 360$
   Complex zeros:
   Real zeros:
   Non-Real zeros:

2. $x^5 + 3x^3 - 4x + 7$
   Complex zeros:
   Real zeros:
   Non-Real zeros:

3. $3x^3 + 2x^2 - 12x + 13$
   Complex zeros:
   Real zeros:
   Non-Real zeros:

4. $x^4 - 11x^3 + 37x^2 - 9x - 58$
   Complex zeros:
   Real zeros:
   Non-Real zeros:

#5-9: Write the linear factorization of the polynomial with the given zeros.

5. 0, 5*i*, and 2

6. 4*i*, 2, and -2

7. 1, -1 (multiplicity 3), and 3*i*

8. 3 (multiplicity of 2), and 3*i*

9. 2 and 3-2*i*

#10-13: Find all zeros of *p(x)*. Include any multiplicities greater than 1.

10. $p(x) = 3x^3 - 10x^2 + 10x - 4$

11. $p(x) = x^3 - 3x^2 + 4x - 12$

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12. $p(x) = 2x^3 - 3x^2 + 8x - 12$

13. $p(x) = x^4 - 5x^3 + 3x^2 + x$

14. Given the zero 2i, find the remaining zeros for the polynomial $f(x) = x^4 - 16$

15. Match the roots with their equation.

A. 1 _____ $x^4 + x^3 + 2x^2 + 4x - 8 = 0$

B. -2 _____ $x^4 - 5x^2 + 4 = 0$

C. 2

D. -1

E. $2i$

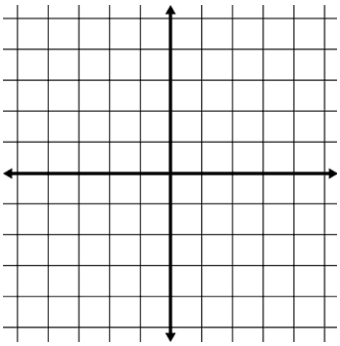
F. $-2i$

Review

1. Graph the following functions and state the domain, range, and end behavior

$f(x) = (x+2)^3 (x-1)^2$

Domain:
Range:
End Behavior:



2. Write a function for the following graph