A2D Cubic Functions with Irrational and Complex Solutions Name_____

- Use your grapher to find the INTEGER zero(s).
- Use synthetic division to break down the polynomial to find a quadratic result.
- Then solve your quotient to find the remaining zeros (exact values).
- State the total number of zeros, and list which ones are Integer vs irrational.
- Write f(x) in x-intercept (factored) form.

1. $f(x) = x^3 - 4x^2 - 2x + 8$

2. $f(x) = x^3 - 8x - 8$

Solutions:
Integer:
Irrational:
Complex:

3. $f(x) = x^3 - 3x^2 - 2x + 6$

4. $f(x) = x^3 + 5x^2 - 7x - 35$

Solutions:
Integer:
Irrational:
Complex:

5. $f(x) = x^3 + 3x^2 + 4x + 12$

6. $f(x) = x^3 - 5x^2 + 36x - 180$

Solutions:
Integer:
Irrational:
Complex

7. Use a graphing calculator to find an integer zero, and then use the Quadratic Formula to find all the remaining roots.

$f(x) = x^3 - 12x^2 + 54x - 68$

Roots:

Equation in Factored Form:

Problems 8-9: Use the zeros of the polynomial to write an equation in factored form. Then write it in expanded form.

8. Zeros of f(x): $-3, i, -i$

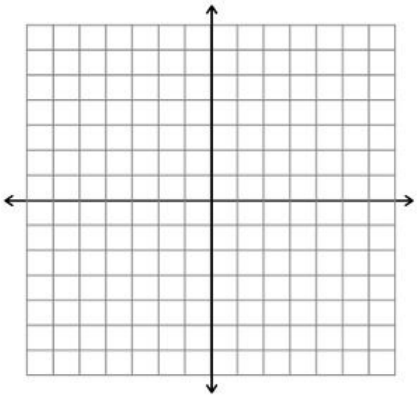
9. Zeros of f(x): $2, \pm\sqrt{5}$

11. Find the missing factors: $2x^3 + 3x^2 - 3x - 2 = (x + 2)(\ ?\ )(\ ?\ )$

12. Divide using long division. $(x^5 + 3x^3 + x^2 - 10x + 6) \div (x^2 + 5)$

13. Solve the following equation for L: $T = 2\pi\sqrt{\frac{L}{g}}$

14. Simplify:
$(3-5i)(2i+5) - (-4+6i)$

15. Given that there is a zero at -5 in $P(x) = x^3 + 9x^2 - 1x - 105$. Use synthetic division to prove that -5is a zero. Then factor and write as a product of linear factors. P(x)= (x_____)(x_____)(x_____) Zeros are _____, _____, _____	Graph without a calculator #13. Make sure you LABEL the x & y Intercepts. 

16. Find the quadratic with zero at -7i?

17.Complete the Table for the 2 options for Cubic Polynomials:

Real Solutions	Complex Solutions