**Instructions**: Show all work. Use exact answers unless otherwise asked to round.

1. Simplify, and write in standard form.
   a. $(4 - 8i)(-3 + i)$

   b. $\dfrac{3+2i}{4-3i}$

2. One zero of the polynomial equation $x^4 - 2x^2 - 16x - 15 = 0$ is $x = 3$. Use polynomial division to reduce the polynomial. Then find the rest of the real and complex zeros of the function. You may use the Rational Zero's Theorem and/or The Remainder Theorem. Write the final factored form of the polynomial with linear factors or quadratics with real coefficients (when the roots are complex). Graph the function.
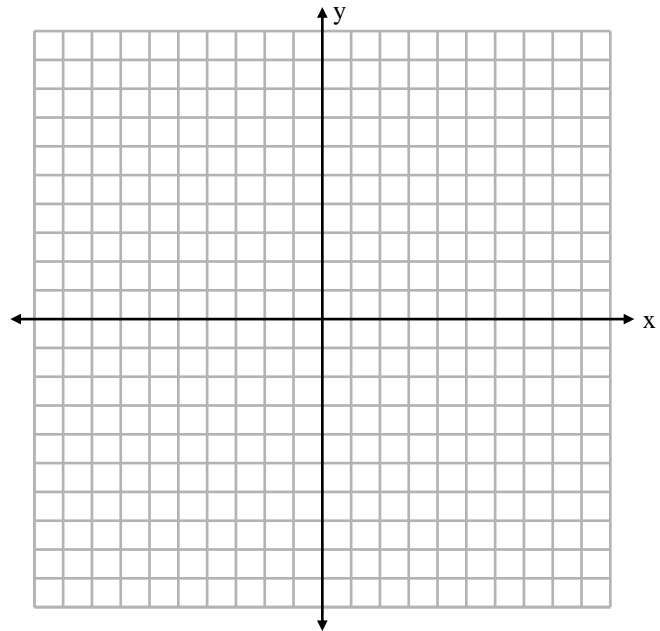
3. Find all the real and complex zeros of the polynomial $p(x) = x^5 - x^4 + 7x^3 - 7x^2 + 12x - 12$.

4. Create a polynomial with the following properties:
   - The solutions to $f(x) = 0$ are $x = \pm 2, x = \pm 7i$
   - The leading term of $f(x)$ is $-3x^5$
   - The point (2,0) is a local maximum on the graph of $y = f(x)$.