1. \( f(x) = x^4 - 2x^3 - 12x^2 + 18x + 27 \)
   If \( x = 3 \) is a double root
   (show all work please, do not use a graphing calc!)

2. Use long division to divide \( (24x^2 - x - 8) \div (3x - 2) \)

3. Use synthetic division to divide \( (3x^3 - 10x^2 + 12x - 22) \div (x - \frac{1}{2}) \)

4. Given two factors find all the zero’s. (Do not use a graphing calculator)
   \( (x^4 - 4x^3 - 7x^2 + 22x + 24) \) if \( (x + 2) \) and \( (x + 1) \) are factors.
5. Find all the zero’s of the polynomial: \( f(x) = 6x^4 - 25x^3 + 14x^2 + 27x - 18 \)
   (Answers must be exact...no decimal answers!)

6. \((7 + 5i) + (-4 + 2i)\)
7. \((1 + 6i)(5 - 2i)\)

8. \((5 - \sqrt{-4}) + (5 + \sqrt{-4})\)
9. \(\frac{6+i}{i}\)

10. \(\frac{6 + i\sqrt{2}}{6 - i\sqrt{2}}\)
11. Plot the complex number on the argand diagram: \((-4 + 2i)\)

12. **Graphing Calculator problem:**
    
    A farmer wants to make a rectangular enclosure using the wall of the barn as one side and 20 meters of fencing for the other three sides.
    
    a. Express the area in terms of \(x\) and state the domain.
    
    b. Find the greatest area.
Answer Key Review 2.1-2.4 #2

1. \( x = -3, 3DR, -1 \)
2. \( 8x + 5 + \frac{2}{3x - 2} \)
3. \( 3x^2 - \frac{17}{2}x + \frac{31}{4} \quad R = \frac{-145}{8} \)
4. \( x = -2, 3, -1, 4 \)
5. \( x = -1, 1, 3, 2 \)
6. \( 3 + 7i \)
7. \( 17 + 28i \)
8. \( 10 \)
9. \( 1 - 6i \)
10. \( \frac{17 + 6i\sqrt{2}}{19} \)
11. Left 4, up 2
12. A.
   \( a(x) = 2x(10 - x); \quad \text{domain:} (0, 10) \)
   B. \( 50m^2 \)