Factoring Polynomials (Advanced)

1. $$x^3 - x^2 + 2x - 2 = 0$$

    For what real value of x is the equation above true?

2. $$x + \sqrt{x} - 6 = 0$$

    For what real value of x is the equation above true?

3. If $q > 0$ and $(4q)^2 + 3(4q) - 10 = 0$, what is the value of q?

4. $$5x^3 - 10x^2 + 3x - 6 = 0$$

    For what real value of x is the equation above true?

5. $$x^6 - 26x^3 - 27 = 0$$

    For what real, positive value of x is the equation above true?

6. The sum of 2 positive numbers is 136. The lesser number is 26 more than the square root of the greater number. What is the value of the greater number minus the lesser number?