Supplementary Homework for Math 43

S1: Consider Cardano's cubic equation $x^3-3px+2q=0$ mentioned in lecture. Let $D:=q^2-p^3$.

- 1. Verify the claim made in lecture that if D=0, then Cardano's equation has exactly two distinct real roots. Find the values of those roots. (Hint: Cardano's solution is $-2\sqrt[3]{q}$.)
- 2. Use Cardano's solution to find the real root of $y^3 + 3y^2 + 6y + 6 = 0$.