

# Math 1513 - College Algebra

## Written Assignment 9 - Due 2011.03.12

---

Directions: Please answer the following question in complete sentences. Be sure to label all geometric objects in any illustrations. I will accept an answer in a scanned image format, in a Word document or as a pdf.

Question: Every general cubic equation  $aw^3 + bw^2 + cw + d = 0$  can be written in the form  $x^3 + px + q = 0$  (where the squared term can be “depressed”), using the transformation  $w = x - \frac{b}{3}$ . Use this transformation to solve the equation

$$w^3 - 3w^2 + 6w - 4 = 0.$$

Note: If you get bored, look up *Cardano's formula*, which covers the more general case (as opposed to these very specifically chosen examples) where the transformation does not yield  $q = 0$ .