

# Mathematics 2260H – Geometry I: Euclidean geometry

TRENT UNIVERSITY, Winter 2011

## Problem Set #2

Due on Monday, 24 January, 2011.

**Crack open the textbook!**

1. Exercises 2.3A #2 [5]
2. Exercises 2.3A #4 [5]
3. Exercises 2.3B #1 [5]
4. Exercises 2.3C #3 [5]

*The following is an obscure work by the great Romantic poet Samuel Taylor Coleridge.*

### A Mathematical Problem

If Pegasus will let thee only ride him,  
Spurning my clumsy efforts to o'erstride him,  
Some fresh expedient the Muse will try,  
And walk on stilts, although she cannot fly.

*To the Rev. George Coleridge*

Dear Brother,

I have often been surprized, that Mathematics, the quintessence of Truth, should have found admirers so few and so languid.—Frequent consideration and minute scrutiny have at length unravelled the cause—viz.—that though Reason is feasted, Imagination is starved; whilst Reason is luxuriating in it's proper Paradise, Imagination is wearily travelling on a dreary desert. To assist Reason by the stimulus of Imagination is the design of the following production. In the execution of it much may be objectionable. The verse (particularly in the introduction of the Ode) may be accused of unwarrantable liberties; but they are liberties equally homogeneal with the exactness of Mathematical disquisition, and the boldness of Pindaric daring. I have three strong champions to defend me against the attacks of Criticism: the Novelty, the Difficulty, and the Utility of the Work. I may justly plume myself, that I first have drawn the Nymph Mathesis from the visionary caves of Abstracted Idea, and caused her to unite with Harmony. The first-born of this Union I now present to you: with interested motives indeed—as I expect to receive in return the more valuable offspring of your Muse—

Thine ever,  
S. T. C.

[Christ's Hospital,] March 31, 1791.

This is now—this was erst,  
Proposition the first—and Problem the first.

### I

On a given finite Line  
Which must no way incline;  
To describe an equi-  
-lateral Tri-  
-A, N, G, L, E.  
Now let A. B.  
Be the given line  
Which must no way incline;  
The great Mathematician  
Makes this Requisition,  
That we describe an Equi-  
-lateral Tri-  
-angle on it:  
Aid us, Reason—aid us, Wit!

### II

From the centre A. at the distance A. B.  
Describe the circle B. C. D.  
At the distance B. A. from B. the centre  
The round A. C. E. to describe boldly venture.

(Third Postulate see.)  
 And from the point C.  
 In which the circles make a pother  
 Cutting and slashing one another,  
 Bid the straight lines a journeying go,  
 C. A., C. B. those lines will show.  
 To the points, which by A. B. are reckon'd,  
 And postulate the second  
 For Authority ye know.  
 A. B. C.  
 Triumphant shall be  
 An Equilateral Triangle,  
 Not Peter Pindar carp, not Zoilus can wrangle.

### III

Because the point A. is the centre  
 Of the circular B. C. D.  
 And because the point B. is the centre  
 Of the circular A. C. E.  
 A. C. to A. B. and B. C. to B. A.  
 Harmoniously equal for ever must stay;  
 Then C. A. and B. C.  
 Both extend the kind hand  
 To the basis, A. B.  
 Unambitiously join'd in Equality's Band.  
 But to the same powers, when two powers are equal,  
 My mind forbodes the sequel;  
 My mind does some celestial impulse teach,  
 And equalises each to each.  
 Thus C. A. with B. C. strikes the same sure alliance,  
 That C. A. and B. C. had with A. B. before;  
 And in mutual affiance,  
 None attempting to soar  
 Above another,  
 The unanimous three  
 C. A. and B. C. and A. B.  
 All are equal, each to his brother,  
 Preserving the balance of power so true:  
 Ah! the like would the proud Autocratorix do!  
 At taxes impending not Britain would tremble,  
 Nor Prussia struggle her fear to dissemble;  
 Nor the Mah'met-sprung Wight,  
 The great Mussulman  
 Would stain his Divan  
 With Urine the soft-flowing daughter of Fright.

### IV

But rein your stallion in, too daring Nine!  
 Should Empires bloat the scientific line?  
 Or with dishevell'd hair all madly do ye run  
 For transport that your task is done?  
 For done it is—the cause is tried!  
 And Proposition, gentle Maid,  
 Who soothly ask'd stern Demonstration's aid,  
 Has prov'd her right, and A. B. C.  
 Of Angles three  
 Is shown to be of equal side;  
 And now our weary steed to rest in fine,  
 'Tis rais'd upon A. B. the straight, the given line.

1791, first published in 1834