ADDITIONAL FILES FOR UNIT III

Basic material (may be covered on quizzes or examinations)

http://math.ucr.edu/~res/math133/geometrynotes03a.f13.pdf

http://math.ucr.edu/~res/math133/geometrynotes03b.f13.pdf

http://math.ucr.edu/~res/math133/geometrynotes03c.f13.pdf

The course notes for this unit (not really additional files).

http://math.ucr.edu/~res/math133/transversal-pairs.pdf

This file contains illustrated examples of the various pairs of angles formed when two lines in a plane are cut be a transversal; the formal definitions of the angle pairs are on pages 104 – 105 of the course notes.

http://math.ucr.edu/~res/math133/similarity.pdf

This file describes the alternate approach to some general facts about similarity which was given in the lectures.

http://math.ucr.edu/~res/math133/sum180.pdf

This file contains an alternate proof that, in Euclidean geometry, the angle sum of a triangle is 180 degrees (this is Theorem III.2.13 in the course notes).

http://math.ucr.edu/~res/math133/semicircle-thm.pdf

This file presents a vector – geometric proof that an angle inscribed in a semicircle is a right angle (a special case of the result on intercepted arcs which is discussed on page 136 of the notes).

http://math.ucr.edu/~res/math133/animated-constructions.pdf

This file gives web links to videos which depict some common geometrical constructions with straightedge and compass.

http://math.ucr.edu/~res/math133/two-circles.pdf

This file gives an alternate proof for the Two Circle Theorem Section III.6 using geometric transformations, which map the general case to a special case where the underlying algebra simplifies.

http://math.ucr.edu/~res/math133/concurrence3D.pdf

This file gives a proof for a standard result in solid geometry using vectors: The set of point equidistant from the vertices of a triangle is the line through the triangle's circumcenter (see Section III.4) which is perpendicular to the plane of the triangle.

http://math.ucr.edu/~res/math133/solid-triangle-centroids.pdf

This file contains a proof that the centroid of a solid triangular region is the point where the triangle's three medians meet (see Section III.4 for background); the proof uses affine transformations and standard techniques from single variable integral calculus. It is closely related to the file, http://math.ucr.edu/~res/math133/centroids.pdf, from Unit I.

http://math.ucr.edu/~res/math133/threedim-angles.pdf

This file presents some basic results on $3-$ dimensional solid angles, with several exercises and their solutions.

http://math.ucr.edu/~res/math133/neusis-classical.pdf

http://math.ucr.edu/~res/math133/neusis.pdf

These files contain further information on a type of construction with a ***marked*** straightedge and compass (the so – called ***neusis*** constructions) discussed at the end of Section **III.6** in the course notes.

http://math.ucr.edu/~res/math133/synthetic-3Daffine.pdf

This file gives synthetic proofs of some basic theorems in $3-$ dimensional geometry using only the Axioms of Incidence and Playfair's Postulate.

http://math.ucr.edu/~res/math133/affine+measure.pdf

This file discusses affine transformations which preserve areas or volumes.

http://math.ucr.edu/~res/math133/aabUpdate06f13.pdf

http://math.ucr.edu/~res/math133/aabUpdate08f13.pdf

These files include lists of the assigned exercises for this unit of the course.

http://math.ucr.edu/~res/math133/math133exercises03.f13.pdf

http://math.ucr.edu/~res/math133/math133exercises03a.f13.pdf

The entire set of exercises for this unit of the course.

http://math.ucr.edu/~res/math133/math133solutions04.f13.pdf

http://math.ucr.edu/~res/math133/math133solutions04.figures.f13.pdf

http://math.ucr.edu/~res/math133/math133solutions04a.f13.pdf

http://math.ucr.edu/~res/math133/math133solutions05.f13.pdf

http://math.ucr.edu/~res/math133/math133solutions05.figures.f13.pdf

http://math.ucr.edu/~res/math133/math133solutions06.f13.pdf

http://math.ucr.edu/~res/math133/math133solutions06.figures.f13.pdf

These files contain solutions to exercises for this unit of the course, with files of drawings to accompany some of the solutions files as indicated.

Supplementary material

As before, many files in **http://math.ucr.edu/math133/geometrynotes01x.f13.pdf** under the heading, "Supplementary material," could be added to this list, and the same applies to the first four files listed in **http://math.ucr.edu/math133/geometrynotes02x.f13.pdf** under the heading, "Supplementary material."

http://math.ucr.edu/~res/math133/metgeom.pdf

This file was also mentioned in connection with Unit **II**; it is also cited here because it discusses of the notion of similarity, which appears in Section **III.5** of the course notes.

http://math.ucr.edu/~res/math133/affine-convex.pdf

http://math.ucr.edu/~res/math133/extreme-pts.pdf

These files deal mainly with topics from Unit **II**, but they are also cited here because the proofs that various subsets are not affine equivalent immediately imply that these subsets are not geometrically similar to each other in the sense of Section **III.5** in the course notes.

Optional material

As before, the files in **http://math.ucr.edu/math133/geometrynotes01x.f13.pdf** under the heading, "Optional material," could be added to this list, and similarly for the single file listed in **http://math.ucr.edu/math133/geometrynotes02x.f13.pdf** under the heading, "Optional material."