

Math 1020/FA 1020

Math In Art

Additional Information

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Web pages for this course.

<http://server.maths.umanitoba.ca/homepages/sasho/>

The main page: contains links. One click away is

<http://server.maths.umanitoba.ca/homepages/sasho/CurentCourses/00courses.html>

This is a hub with link to old and new courses

One more click and you are looking at

http://server.maths.umanitoba.ca/homepages/sasho/CurentCourses/Math_Art_Spring_2014/MathInArt_2014.html

This is a page dedicated to this course, this section. Contains illustration, a few movies and handouts. Solutions of the midterm exam problems, as well as the results will be posted here.

<http://home.cc.umanitoba.ca/cgi-bin/discus/discus.cgi>

A discussion page.

<http://webware.cc.umanitoba.ca:8080/webMathematica/Files/MathInArt.html>

WebMathematica Page: contains applets for real-time manipulation and drawing of various objects (fractals, tilings etc.)

Material covered (refer to the textbook):

| Section | Pages | Suggested Problems |
|---|---------|--------------------|
| 1.1. Euclidean Geometry | 1-6 | |
| 1.2. Euclidean Constructions | 6-14 | 1-8 |
| 1.3. Golden Ratio | 14-24 | 1-11 |
| 1.4. Fibonacci numbers | 24-31 | 1-6 |
| | | |
| 2.1. Plane Symmetries | 33-42 | 1-9 |
| 2.3. Groups of Symmetries | 55-60 | 1-7 |
| 2.4. Frieze Patterns (part) | 61-72 | 1-3 |
| 2.5. Wallpaper designs; Tilings (part) | 72-81 | |
| 2.6. Tilings and Art (part) | 81-89 | |
| | | |
| 3.1. Similarities | 91-100 | 1-7 |
| 3.3. Fractals (part) | 100-123 | 1-4 |
| 3.4. Julia Sets (part) | 123-131 | 1-3 |
| | | |
| 4.1. Non-Euclidean Geometries | 143-146 | |
| 4.2. Inversion | 146 | |
| 4.3. Hyperbolic Geometry | 153-158 | |
| 4.4. Hyperbolic Constructions | 158-163 | 1-7 |
| 4.5. Tilings in Hyperbolic Plane (part) | 163-167 | |
| | | |
| 5.1. Perspective | 169-181 | 1-9 |
| 5.3. Polyhedra (part) | 197-206 | 1-4 |
| 5.4. Conic Sections (part) | 206-216 | 1-6 |
| | | |
| 6.1. Homotopy | 223-230 | 1-6 |
| 6.2. Two-Manifolds and Euler (part) | 230-237 | 1-6 |
| 6.3. Other Manifolds (overview only) | 237-247 | |