DynaMAT
Materials of AT team

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Proposals for materials

1. DGS – optics
2. DGS – extreme values in geometry
3. Fractals – limits of series
4. GPS – aviation (interpreting graphs)
5. GPS – GeoCaching (geometry)

Material 1 – optics

- Using GeoGebra to demonstrate reflection and refraction

- Calculations with trigonometric functions

- Explaining how GeoGebra works

- Tasks for students to discover properties of optical lenses and of trigonometric functions
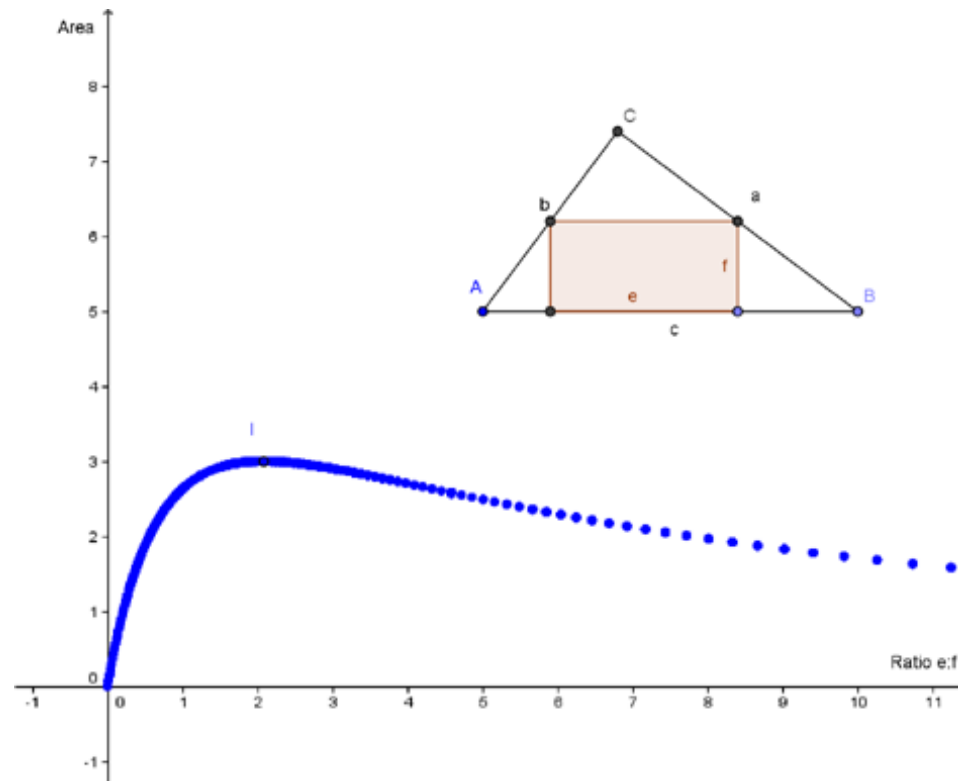
Material 1 – optics
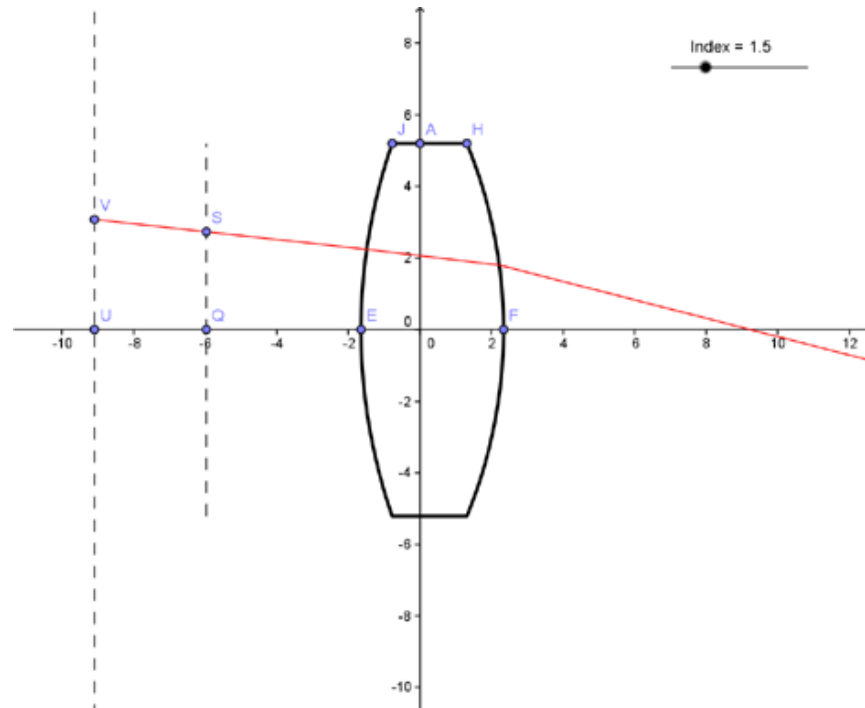
Material 2 – extreme values

- Using GeoGebra to estimate extreme values in typical geometric tasks

- Confirming estimations by making classic discussion of functions with derivatives

- Drawing graphs of those functions

- Tasks for students to vary the conditions and make guesses about outcomes
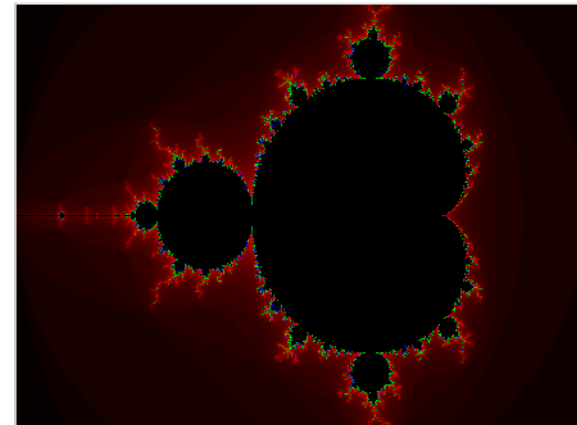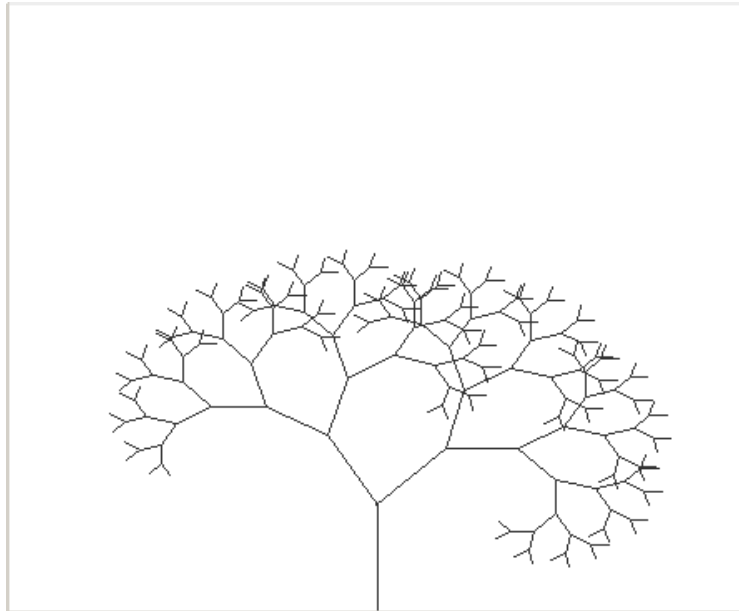
Material 2 – extreme values

Material 3 – fractals

- Using java to construct some well-known fractals

- Calculating limits of series to get the length or area of fractal structures

- Recursive definition of functions, using the Mandelbrot set

- Tasks for students to vary the conditions and make guesses about outcomes
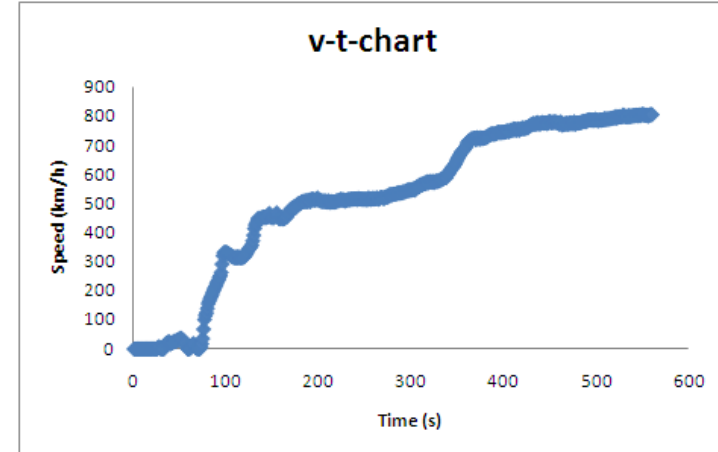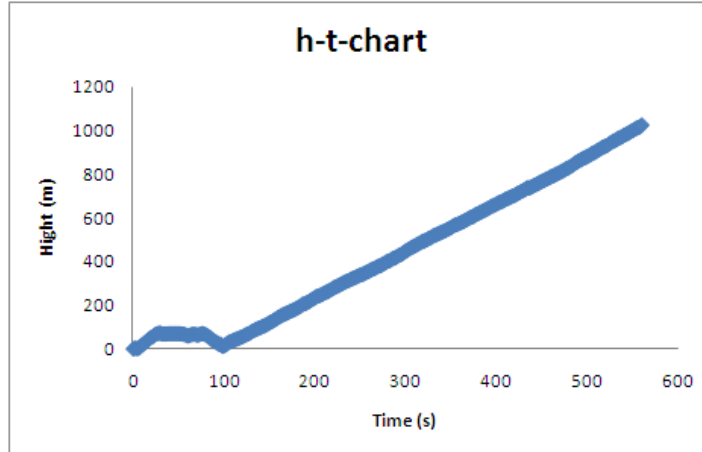
Material 3 – fractals

Material 4 – aviation

- Using GPS and Excel to obtain and interpret real data of airplane take-off and landing

- Interpreting graphs of real-life situations

- Finding functions to model or approximate given graphs

- Tasks for students to predict graphs from other real-life situations

Material 4 – aviation

Material 4 – aviation

Material 5 – GeoCaching

- Using GPS and Excel to obtain and interpret real data of field-tracking in GeoCaching

- Explaining scales of maps

- How GPS works (3D-geometry)

- Tasks for students to interpret GPS data

Material 5 – GeoCaching