ALGEBRAIC AND TRANSCENDENTAL FUNCTIONS
E- PORTFOLIO

Your portfolio must be created in GEOGEBRA.
Our GROUP is "ALGEBRAIC & TRANS. FUNCTIONS" with **CODE: NKEY2** on
https://www.geogebra.org/groups. You must create an account with your e-mail address
(A0xxxx@itesm.mx), include your ID and NAME to identify it.
You can use the following link as a guide: GeoGebraBooks   https://www.geogebra.org/m/P5Zrj0Su

You must join the group (**CODE: NKEY2**) and you have to create a Book with Chapters:

* Chapter: 1st Partial
    1) Rational Functions Project

* Chapter: 2nd Partial
    1) Chernobyl Project. Link of the video
    2) Activity : Definition of Dignity and Reflection on how the emergency response or
rehabilitation occurred in the Chernobyl disaster, was in favor or to the detriment of the populations
dignity.

* Chapter: Final
    Answer the following problems showing your procedures (pictures of hand-written procedures)

1) Concentric circumferences are circles with the same center but different radius. Determine
the equation and the graph that models the figure shown with the following measures of the
diameters: 5.2cm, 15.6cm, 26cm and 36.4cm.

FORMULAS

$5.2cm \rightarrow x^2 + y^2 = 169/25$
$15.6cm \rightarrow x^2 + y^2 = 1521/25$
$26cm \rightarrow x^2 + y^2 = 169$
$36.4cm \rightarrow x^2 + y^2 = 8281/25$

2) A communication satellite is located at an elliptic orbit, having the Earth as one of its focus.
The major axis of the orbit is 32,400 miles long and its minor axis is 24,800 miles long. Determine the
equation of the orbit and its graph showing the position of the Earth. Assume that the focus is in the
"x-axis" and the center is at the origin.

$$\frac{x^2}{262,440,000} + \frac{y^2}{153,760,000} = 1$$

3) A parabolic arc with a vertical focal axis has wideness in its base of 40ft and a height to its
center of 15ft. Determine the equation of the arc, assuming that its vertex is at the origin.

$x^2 = -60y$

4) A biologist is researching a newly-discovered species of bacteria. At time $t = 0$ hours, he
puts one hundred bacteria into what he has determined to be a favorable growth medium. Six hours
later, he measures 450 bacteria. Assuming exponential growth, what is the constant growth rate "r"
for the bacteria? Sketch the graph for the growth model.

(Graph in procedure page)

5) In 1935 Charles Richter defined the magnitude of an earthquake to be

$$M = \log \frac{I}{S}$$

(Graph in procedure page)

where I is the intensity of the earthquake (measured by the amplitude of a seismograph reading taken
100 km from the epicenter of the earthquake) and S is the intensity of a "standard earthquake"
(whose amplitude is 1 micron $=10^{-4}$ cm).

Sketch the graph of the magnitude of the Ricther scale as a function of the intensity of the
earthquake. Use the graph to find the intensity of the three most recent earthquakes in the world,
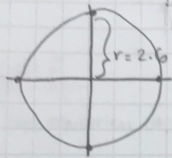occurred early today, November the 9th.

Place	Magnitude on the Ricther scale
Solomon Islands	4.6
Southeast Honshu, Japan	6.0
Coast of Chile	4.9

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① Procedure and answers.
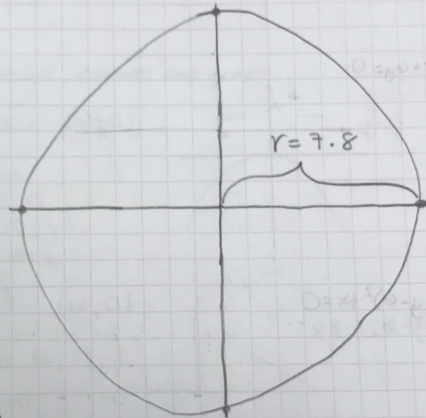
- Diameter 5.2 cm

$$x^2 + y^2 = 6.76$$

or

$$x^2 + y^2 = \frac{169}{25}$$

$r = 2.6$

- Diameter 15.6 cm

$$x^2 + y^2 = 60.84 \quad or$$

$$x^2 + y^2 = \frac{1521}{25}$$

$r = 7.8$

- Diameter 26cm

$$x^2 + y^2 = 169$$

$r = 13$

-2
-4
-6