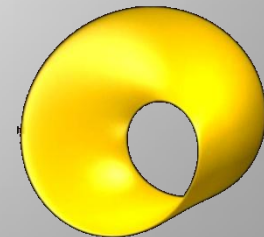
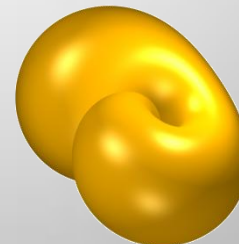
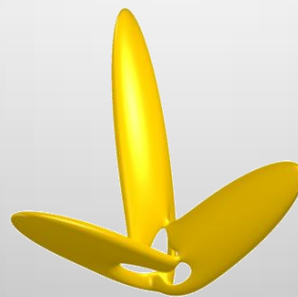
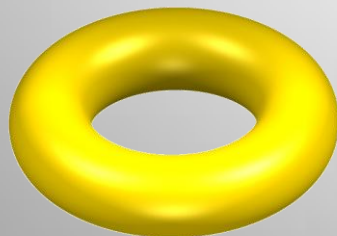
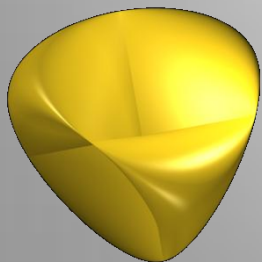


EL RETO TOPOLÓGICO

Luisa Cuadrado Sáez

Elena Thibaut Tadeo



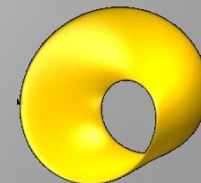
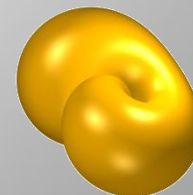
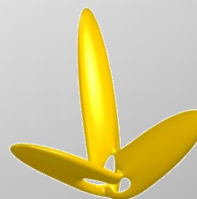
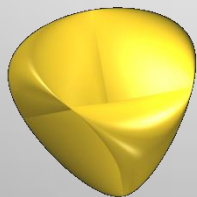
ANTECEDENTES

Sesión de topología intuitiva de años anteriores.



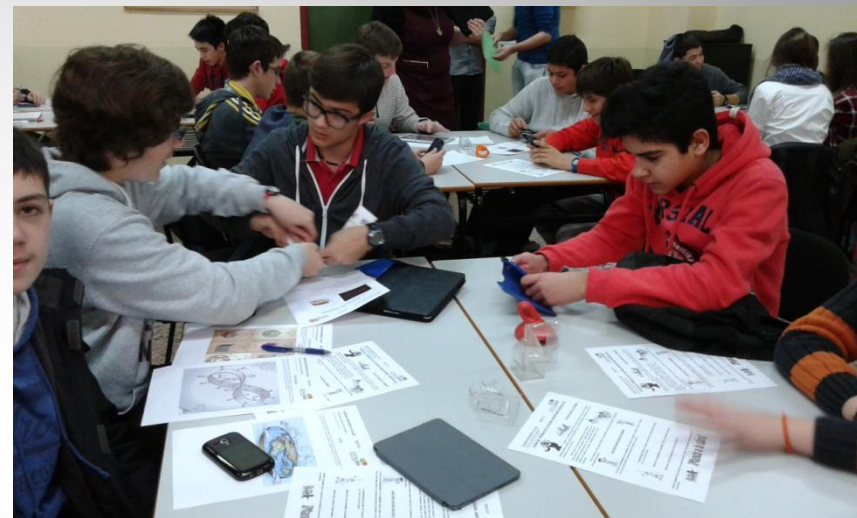
Reestructuramos los objetivos:

- Ampliando el contenido
- Enriqueciendo el método de trabajo.



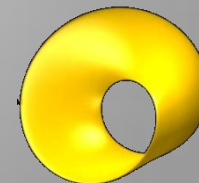
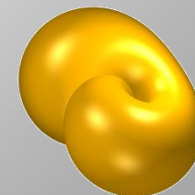
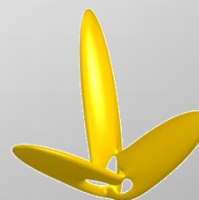
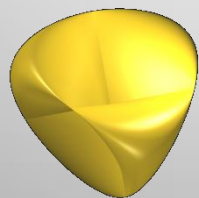
ANTES

SE EXPLICABAN LAS CARACTERÍSTICAS DE LOS OBJETOS.

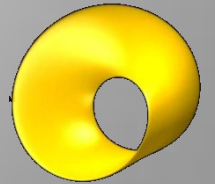
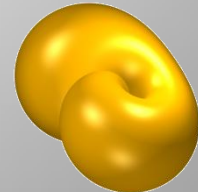
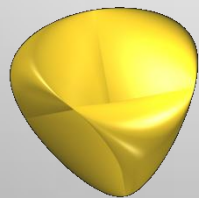


AHORA

SE VEN LOS OBJETOS Y SE DEDUCEN LAS CARACTERÍSTICAS.



EL RETO



EL RETO

Orientando superficies

Acerca de este webmix : Para la sesión de Estalmat CV del día 14 de febrero

18 Usuarios de [Twitter](#) [Like](#)

Creado por Elena Thibaut

ultima actualización: 01-feb-2015 21:16:49 [▶ Empezar a usar este webmix](#)



palabras claves relacionadas Surfaces, APLICACIONES, IOS, Wolfram, MathWorld, The, Web's, M, SURFER, I, IMAGINARY, Ceccebra

Preview comments

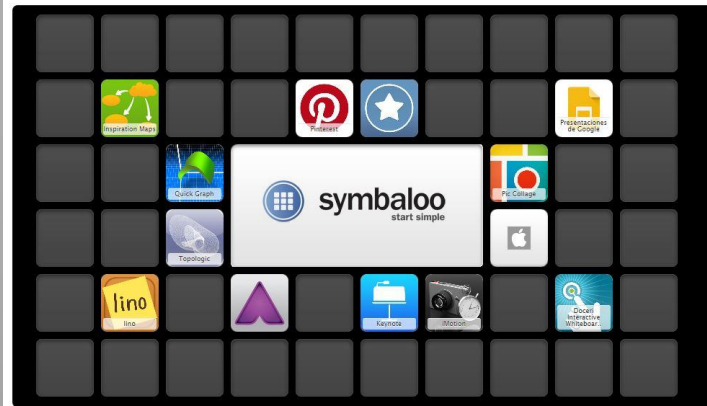
ultima actualización: 01-feb-2015 21:16:49 [▶ Empezar a usar este webmix](#)

APLICACIONES IPAD

Acerca de este webmix : Sin descripción

Creado por LU...

ultima actualización: 03-feb-2015 12:28:41 [▶ Empezar a usar este webmix](#)



palabras claves relacionadas Inspiration, Maps, Quick, Graph, Pinterest, Topologic, lino, Peartrees, para, iPhone, iPod, t

Preview comments

ultima actualización: 03-feb-2015 12:28:41 [▶ Empezar a usar este webmix](#)

14 Usuarios de [Twitter](#) [Like](#)

Creado por Elena Thibaut

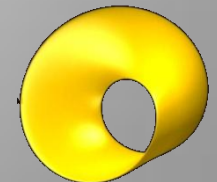
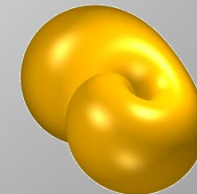
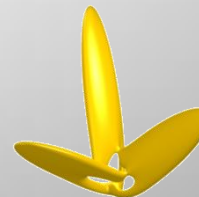
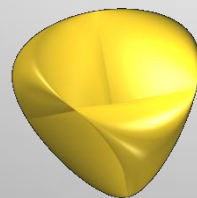
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palabras claves relacionadas MindMeister, (mind, mapping), 3D-Functions, Plotter, Pro, -, And, Pinterest, 3D, Functions, Graph

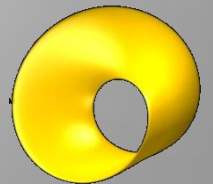
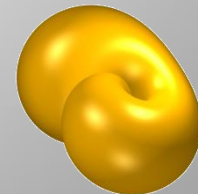
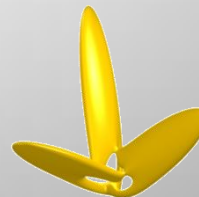
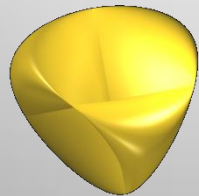
Preview comments

ultima actualización: 01-feb-2015 21:16:49 [▶ Empezar a usar este webmix](#)



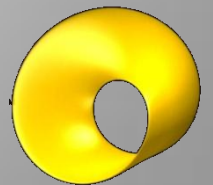
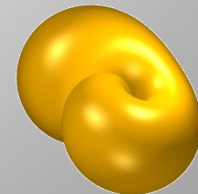
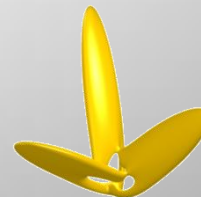
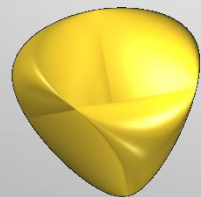
INNOVACIONES

Traen dispositivos móviles a la sesión



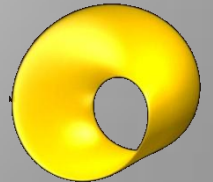
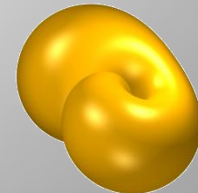
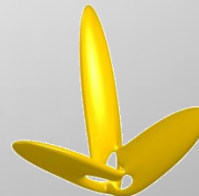
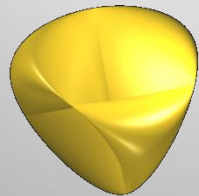
INNOVACIONES

Trabajo por equipos a modo de proyecto



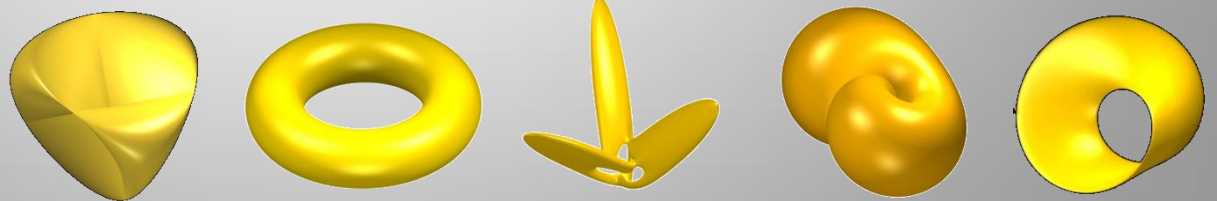
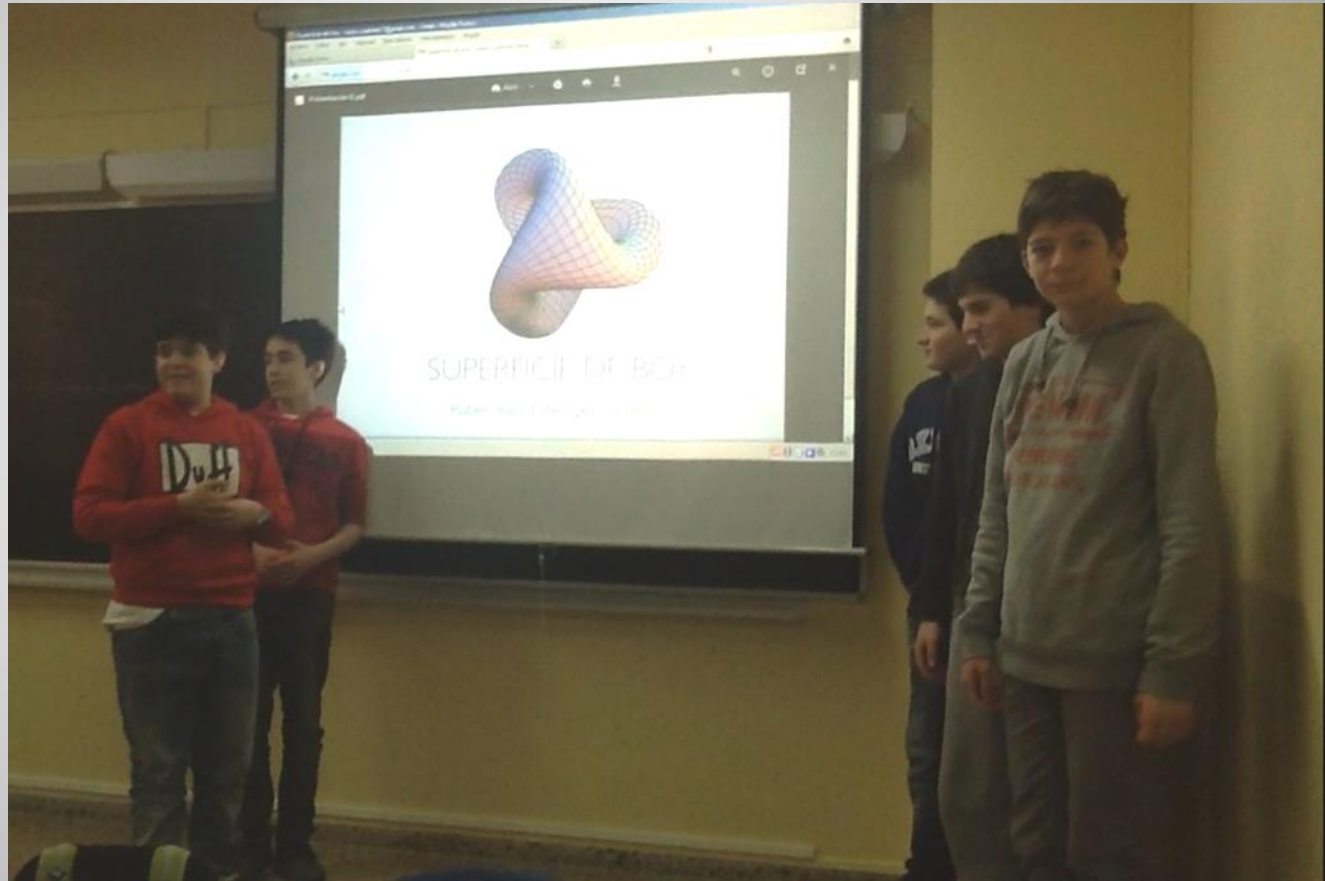
INNOVACIONES

Se proporciona material de trabajo tanto manipulativo como digital

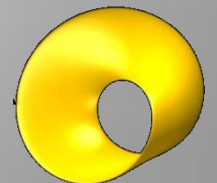
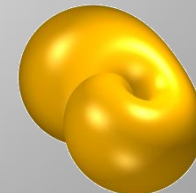
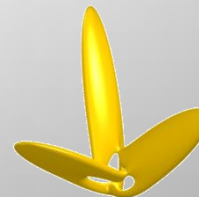
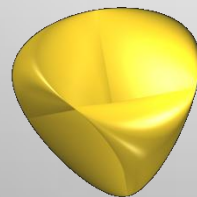


INNOVACIONES

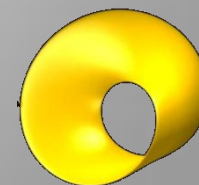
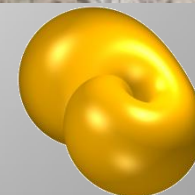
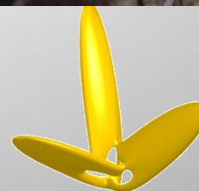
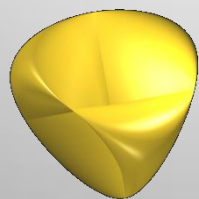
Se acaba con una exposición a modo de mini-congreso



INNOVACIONES

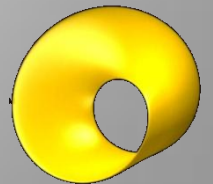
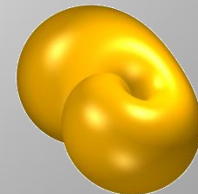
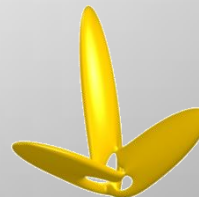
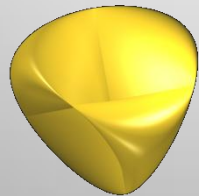
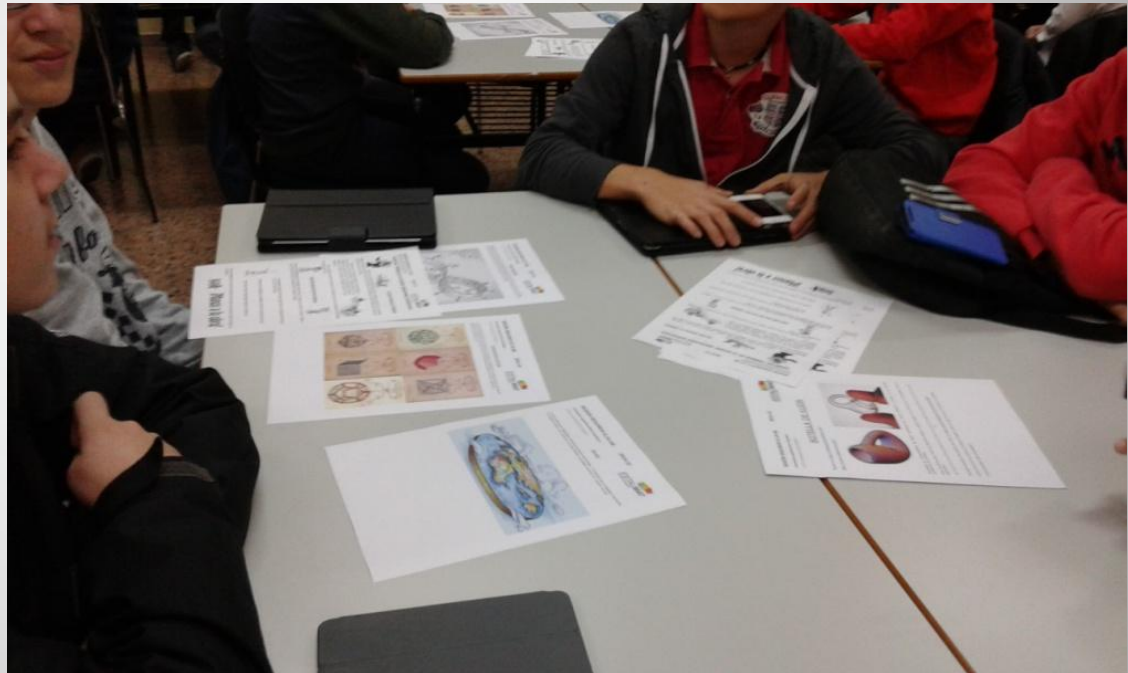


MANOS A LA OBRA



MANOS A LA OBRA

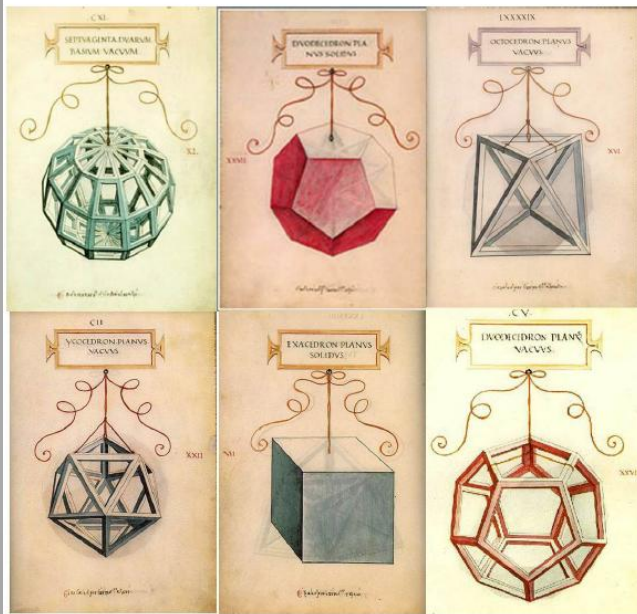
Se les proporciona fichas orientativas y un guión de trabajo



DOCUMENTOS

Característica de Euler

La característica de Euler es un número que caracteriza a la superficie. Se puede calcular contando las caras (C), los vértices (V) y las aristas (A) de una representación poliédrica de dicha superficie y realizando la operación: $A - C + V$



AURASMA

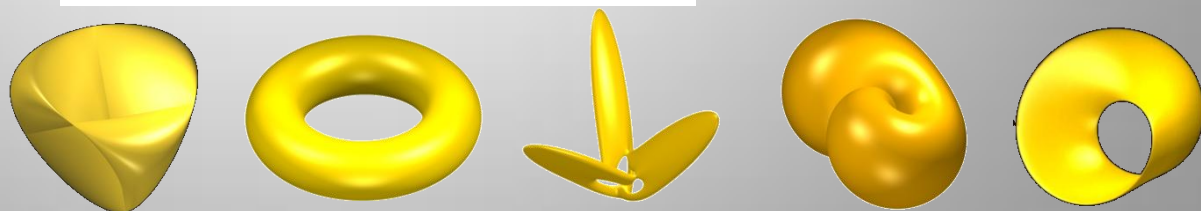
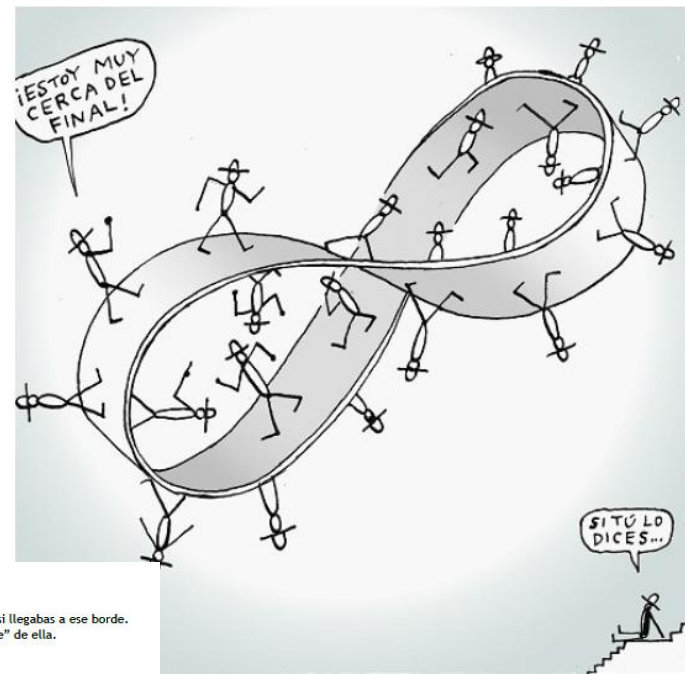
Bordes

La tierra plana que imaginaban nuestros ancestros tenía bordes. Y te podías caer si llegabas a ese borde. En cambio la tierra, tal y como es, no tiene bordes. La puedes recorrer sin "caerte" de ella.



ORIENTABILIDAD

Imaginemos que dos personas caminan en sentidos opuestos por una superficie y vuelven a encontrarse. Si lo hacen cara a cara se dice que la superficie es orientable. Si lo hacen invertidas, como si una de ellas estuviese boca abajo, entonces se dice que la superficie es no orientable.



DOCUMENTOS

SUPERFICIE ROMANA

Busca en <http://mathworld.wolfram.com/>

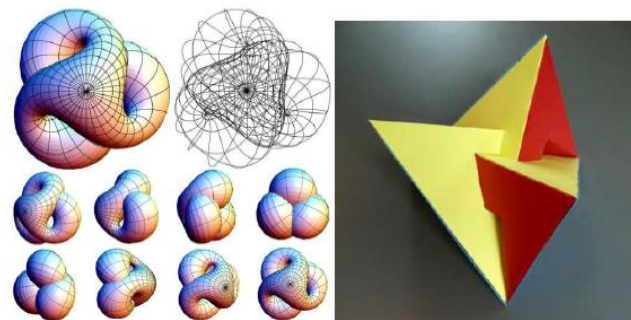
<http://www.mathcurve.com/>



SUPERFICIE DE BOY

Busca en <http://mathworld.wolfram.com/>

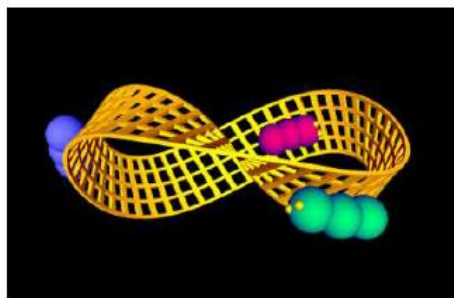
<http://www.mathcurve.com/>



BANDA DE MOEBIUS

Busca en <http://mathworld.wolfram.com/>

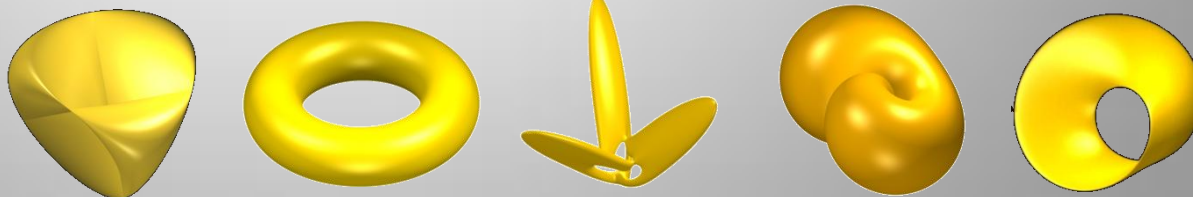
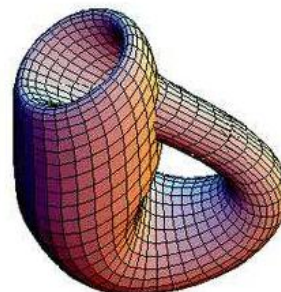
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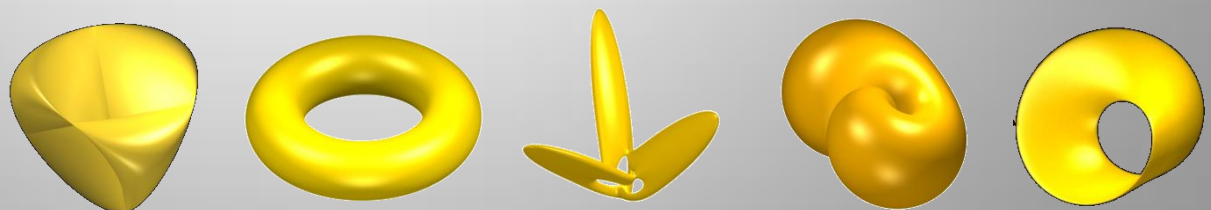
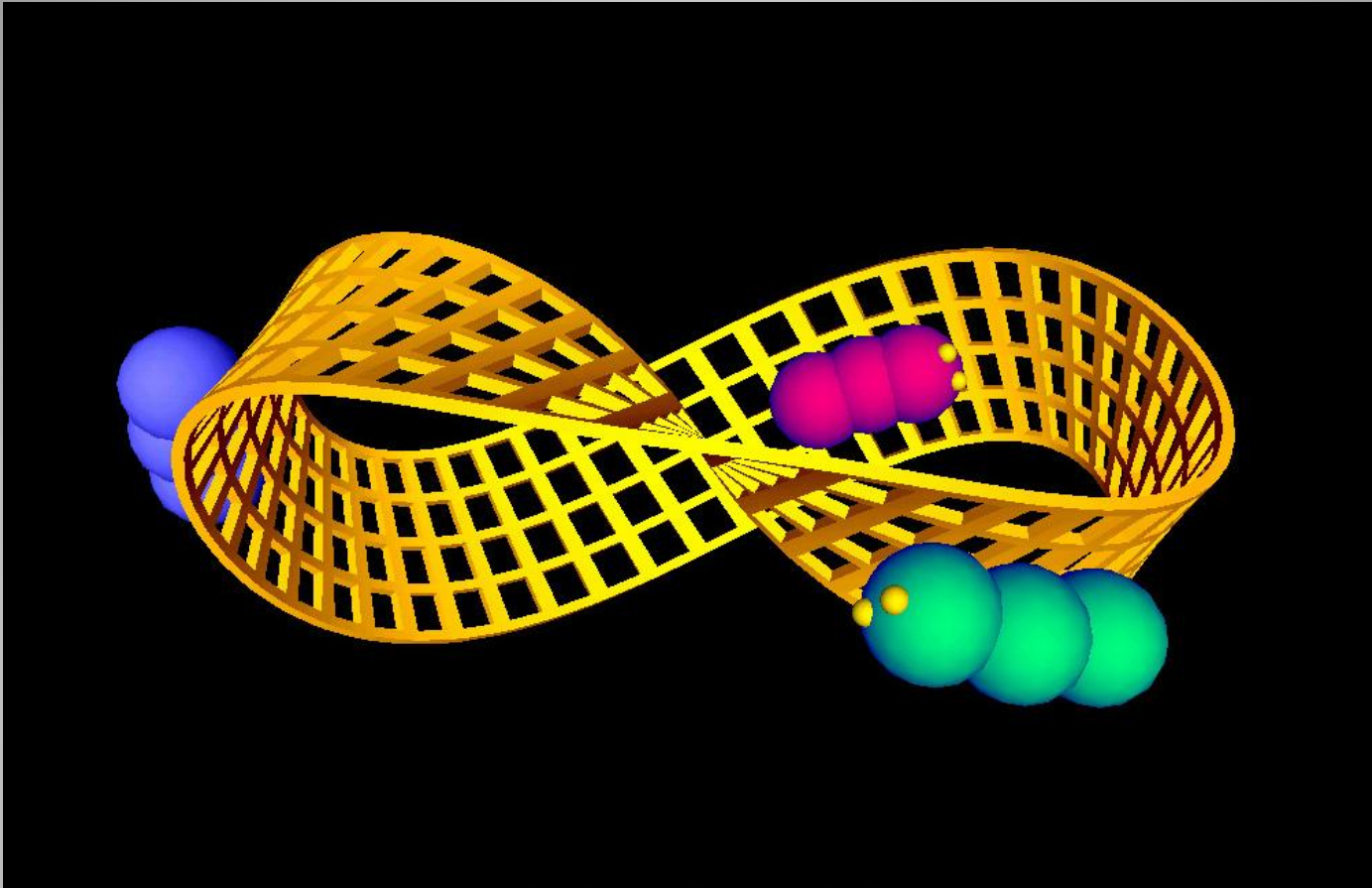


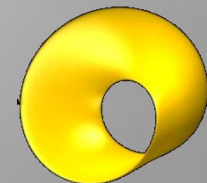
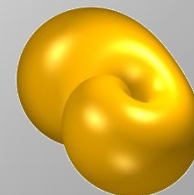
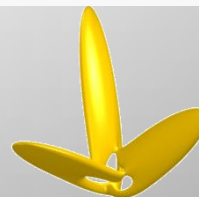
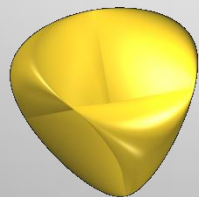
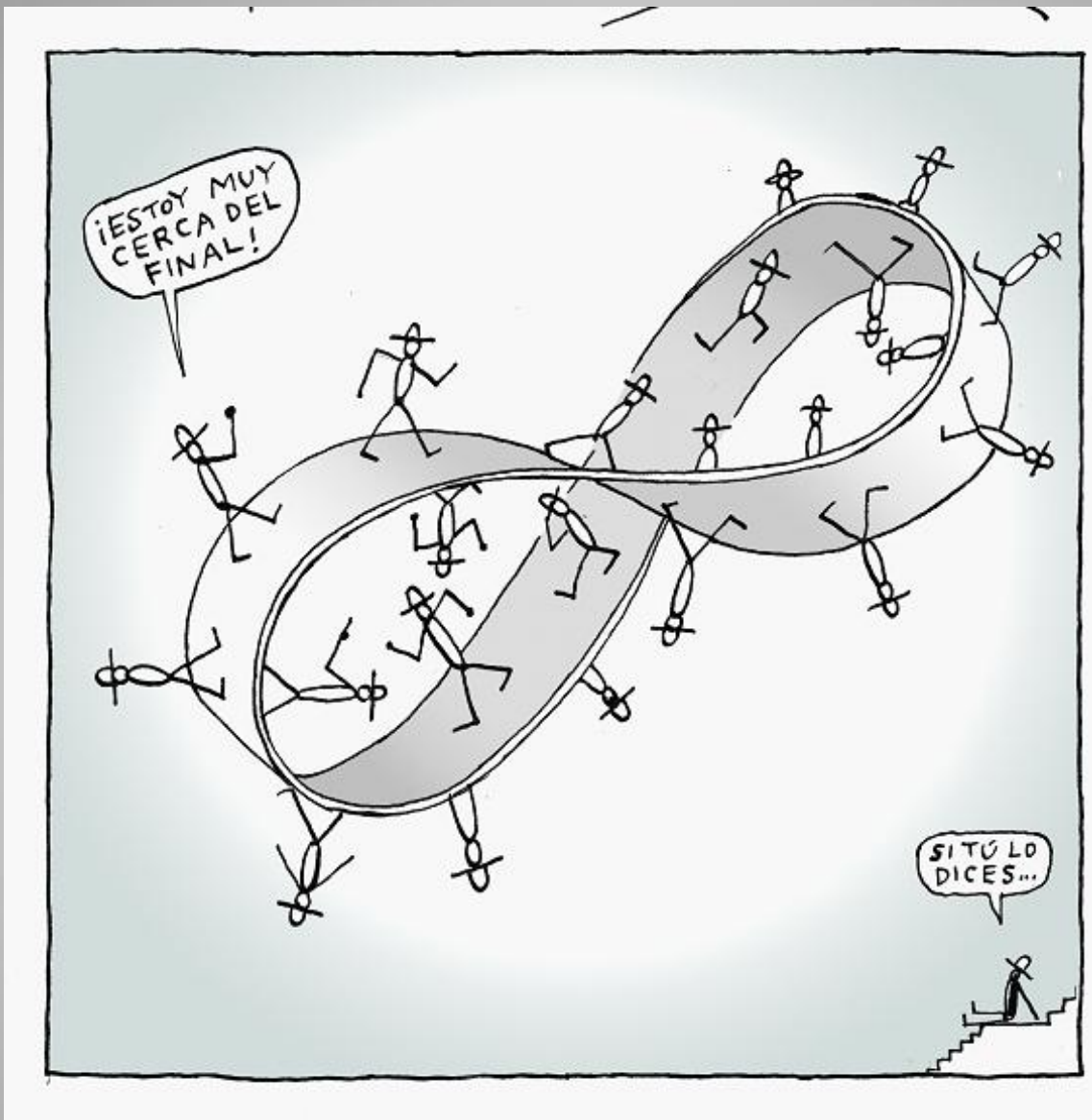
BOTELLA DE KLEIN

Busca en <http://mathworld.wolfram.com/>

<http://www.mathcurve.com/>







GUIÓN DE TRABAJO

SESIÓN SEGUNDO-S.14-AB

2014-15

Orientando superficies-Reto topológico
LUISA CUADRADO-ELENA THIBAUT



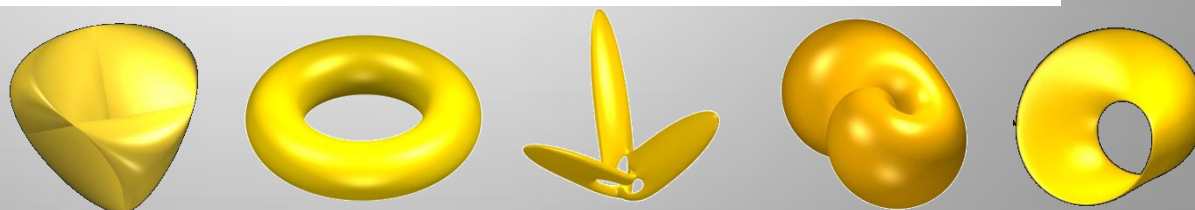
PLANTILLA DEL TRABAJO DE LA SESIÓN: ORIENTANDO SUPERFICIES

OBJETIVO: COMPARTIR LOS RESULTADOS DE LA INVESTIGACIÓN MEDIANTE UNA PRESENTACIÓN, UN VÍDEO, UN MURAL, UN COLLAGE...

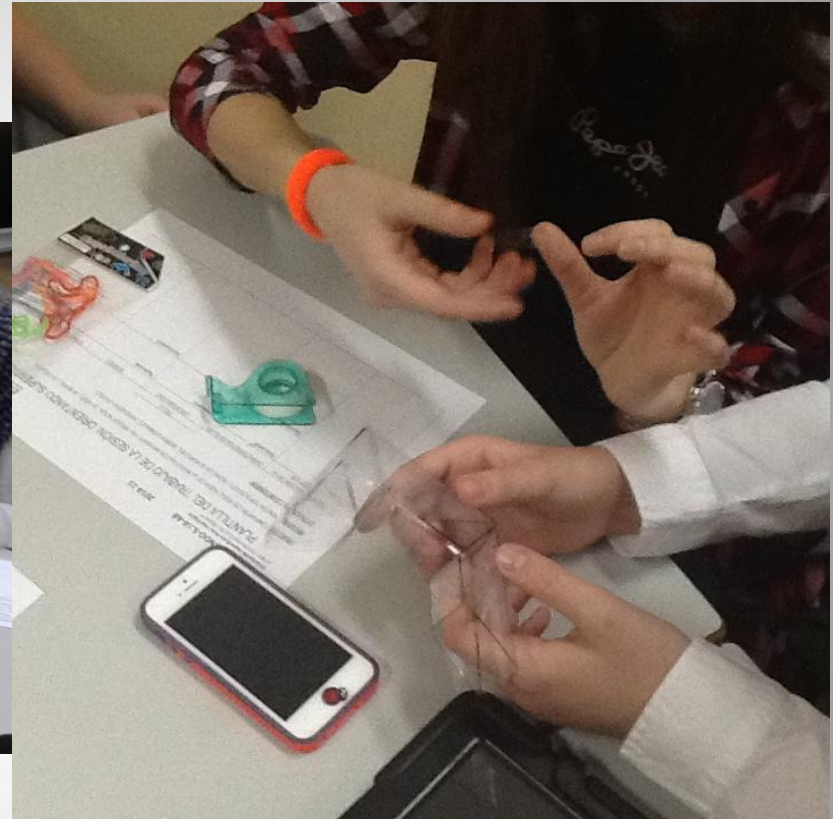
MATERIAL: 'RINCÓN TOPOLÓGICO', FICHAS DE SUPERFICIES, WEBMIX SYMBALOO, BÚSQUEDAS GOOGLE...

ESTRUCTURA Y CONTENIDOS:

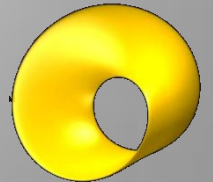
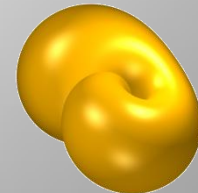
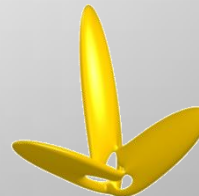
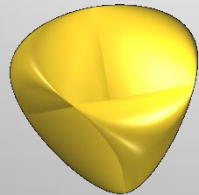
REPRESENTACIÓN DE LA SUPERFICIE	CARACTERÍSTICA DE EULER	TÍTULO		
		ORIENTABILIDAD	BORDES	OTRAS CARACTERÍSTICAS
Imagen	Respuesta:	Respuesta:	Respuesta:	
	Razonamiento	Razonamiento	Razonamiento	



LA INVESTIGACIÓN

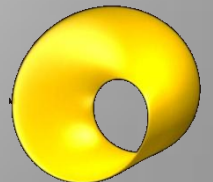
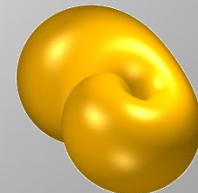
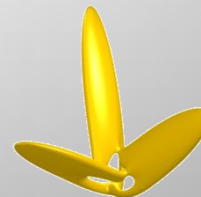
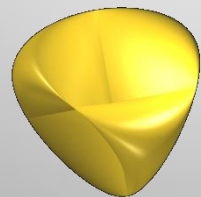


Tienen a su disposición diversos materiales, manipulativos y digitales.

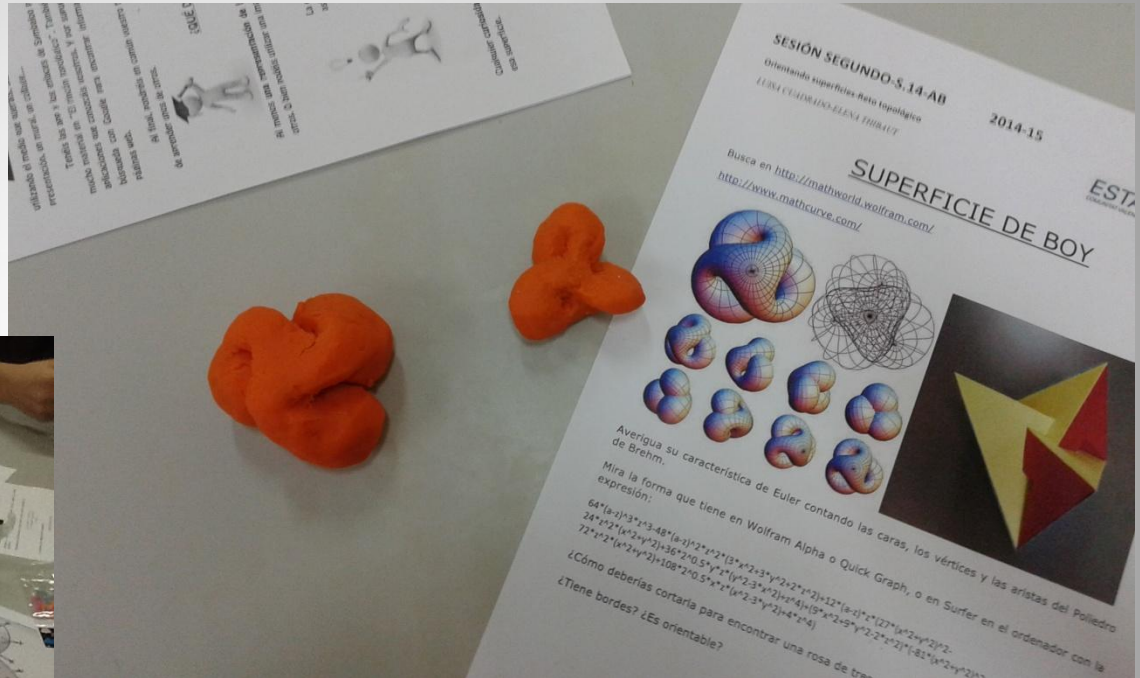


LA INVESTIGACIÓN

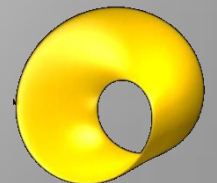
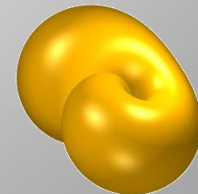
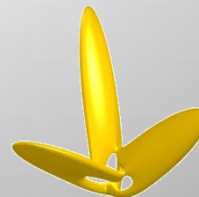
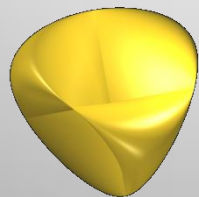
Guiamos la investigación sin intervenir



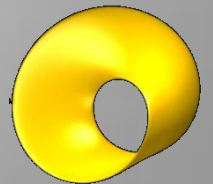
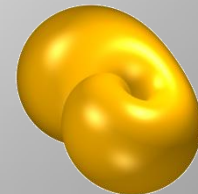
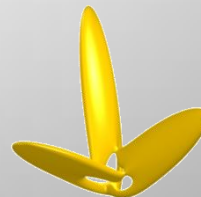
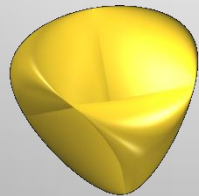
LA INVESTIGACIÓN



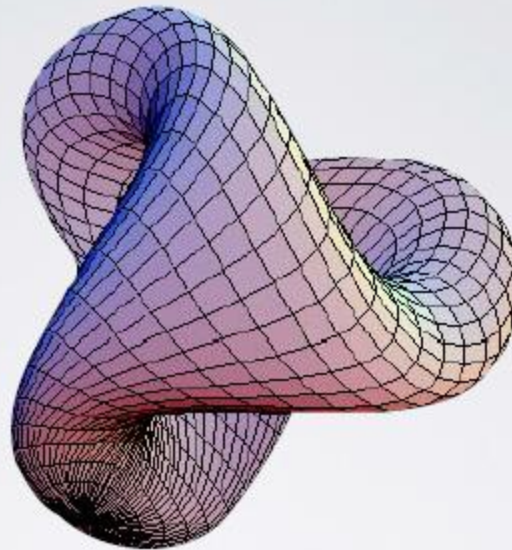
Surgen creaciones propias



LA INVESTIGACIÓN

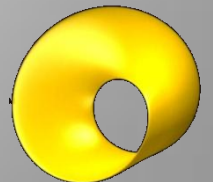
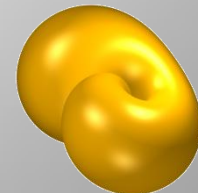
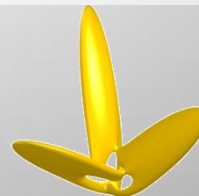
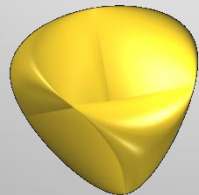


PRODUCTO FINAL

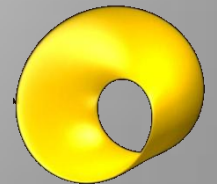
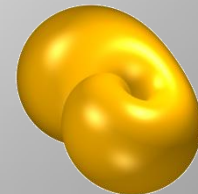
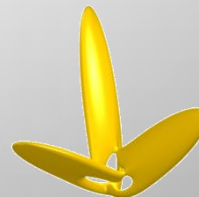
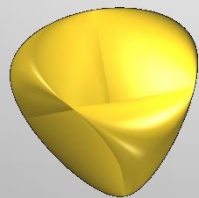


SUPERFICIE DE BOY

Rubén, Raul, Pablo, Quim y Félix



PRODUCTO FINAL



CONCLUSIONES

Se ha trabajado el método científico.

Han generado producciones propias.

Han trabajado en equipo.

Han aprendido de forma autónoma.

También utilizan materiales no digitales.

Falta coordinación y gestión del trabajo en equipo. Son individualistas.

Notamos carencia en iniciativa y toma de decisiones.

