

# Worm Face Gear

3d CAD modeling in SolidWorks using  
special Excel VBA macro from

Spiral Bevel Corporation. 2016.

# Generate Worm Face gear tooth surface files using special Excel file from Spiral Bevel Corporation.

## Run VBA Macros to generate each gear tooth flank.

The image shows a SolidWorks CAD application window with a Microsoft Excel spreadsheet overlaid. The spreadsheet contains gear design parameters and two graphs. A macro dialog box is open in the foreground.

**Excel Spreadsheet Data:**

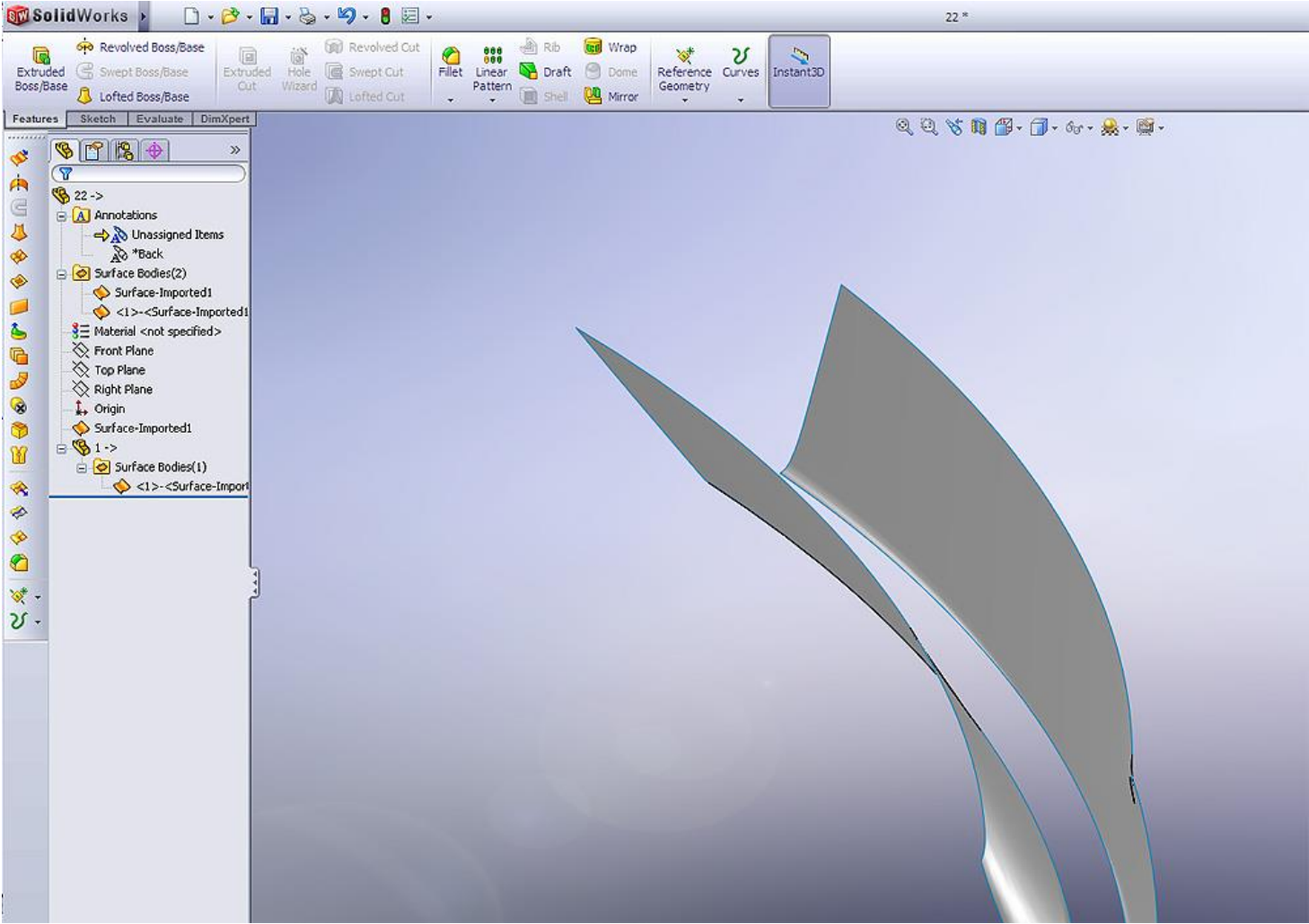
Row	Parameter	Value	Units
20	INPUT		
21	GEAR OUTSIDE DIAMETER	103.0000	
22	TEETH ON GEAR	44	
23	TEETH ON WORM	2	
24	CENTER DISTANCE	35.0000	
25	HAND OF SPIRAL (LEFT OR RIGHT)	RIGHT	
26			
27	Additional Input		
28	GEAR INSIDE DIAMETER	77	80.5
29	WORM DIAMETER	16.583296	17.16322257
30	CONVEX PRESSURE ANGLE	12	10
31	CONCAVE PRESSURE ANGLE	12	10
32	WORM LEAD	11.71088367	11.29537312
33	WORM PITCH DIAMETER	13	12.9821212
34	WORM NORMAL TOP LAND WIDTH	0.70237474	0.722011795
35	NORMAL BACKLASH	0.04	0.0309
36	GEAR TOOTH PROFILE MODIFICATION	0.01	0.0133
37	GEAR LEAD CROWNING	0.02	0.017165667
38	ORDER OF MODIFICATION (2, 3, ..., n+1, ...)	2	3
39	CALCULATION ACCURACY (1, 2, ..., n+1, ...)	1	1
40			
41	Additional Input to get the worm face curve		
42	WORM LEAD ANGLE	16.00000001	
43	WORM BASE DIAMETER	22.88958786	
44	WORM CIRCULAR TRANSVERS TOOTH THICKNESS	12.34920220	

**Graphs:** Two graphs showing the profile of the gear tooth flank. The top graph shows a convex profile with a y-axis from 0 to 0.025 and an x-axis from 0 to 18. The bottom graph shows a concave profile with a y-axis from 0 to 0.012 and an x-axis from 0 to 18.

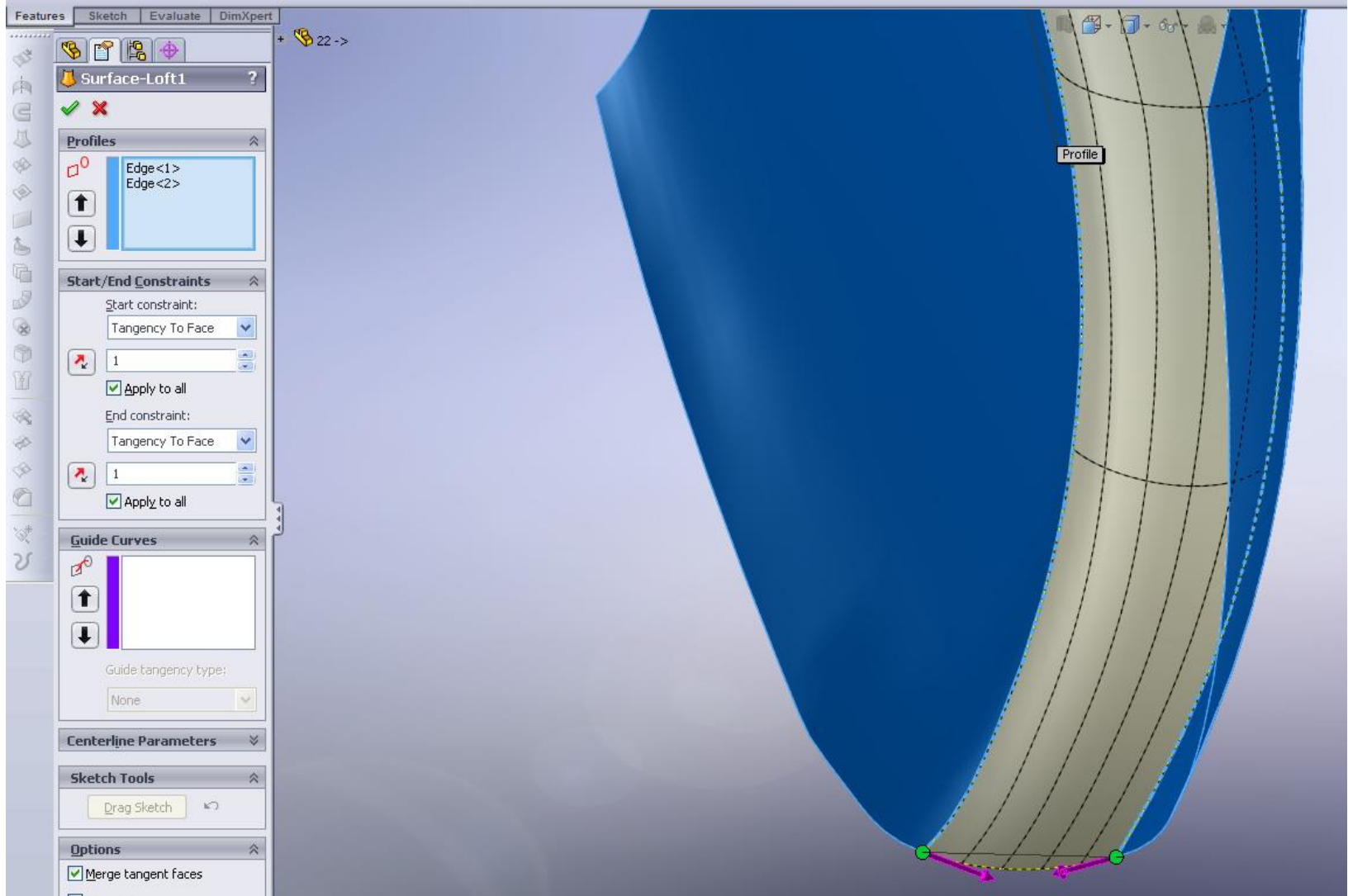
**Macro Dialog Box:**

- Macro name:
- Buttons: Run, Cancel, Step Into, Edit, Create, Delete, Options...
- Macro in: All Open Workbooks
- Description:

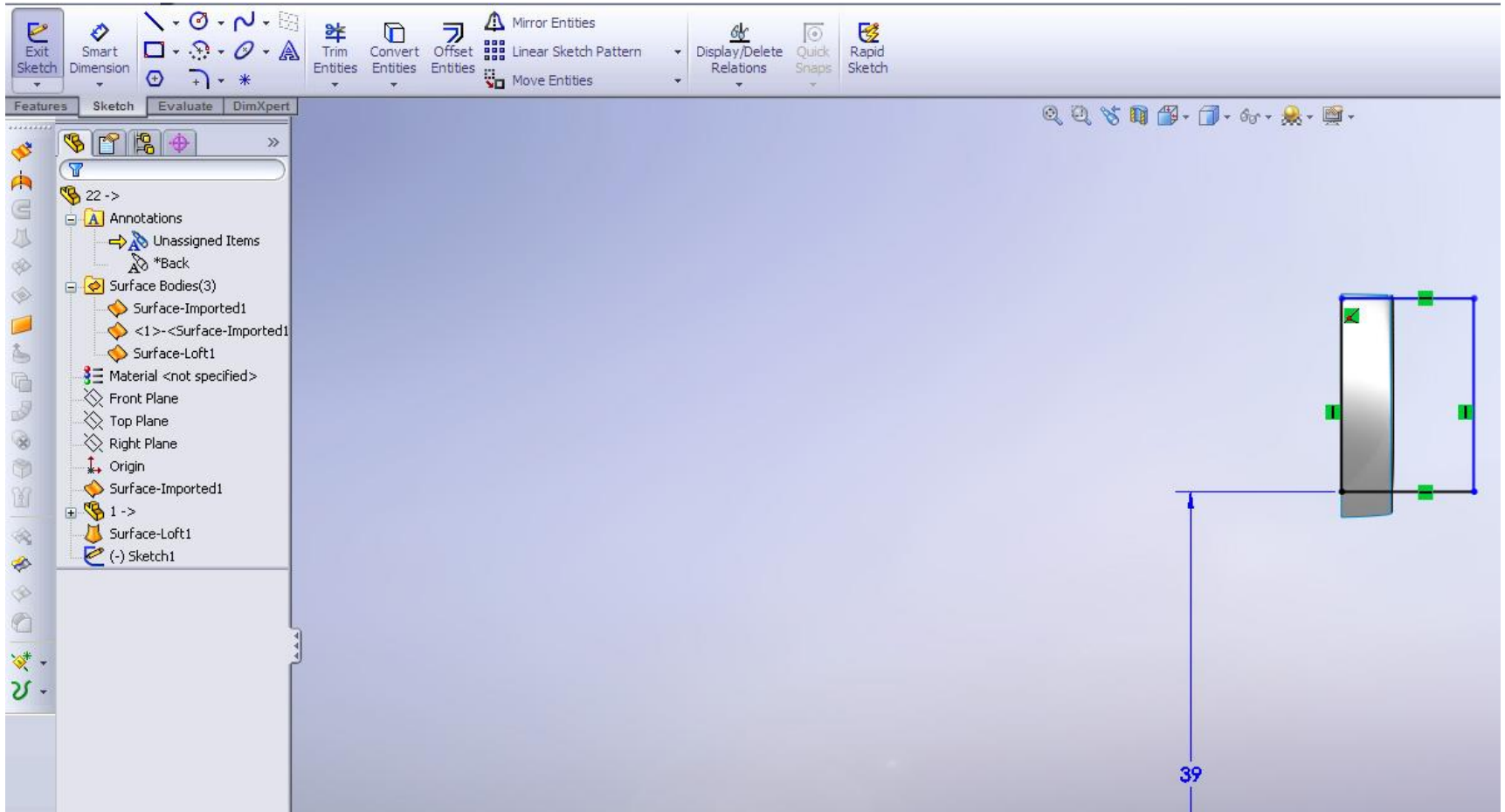
# Open both flanks in SolidWorks



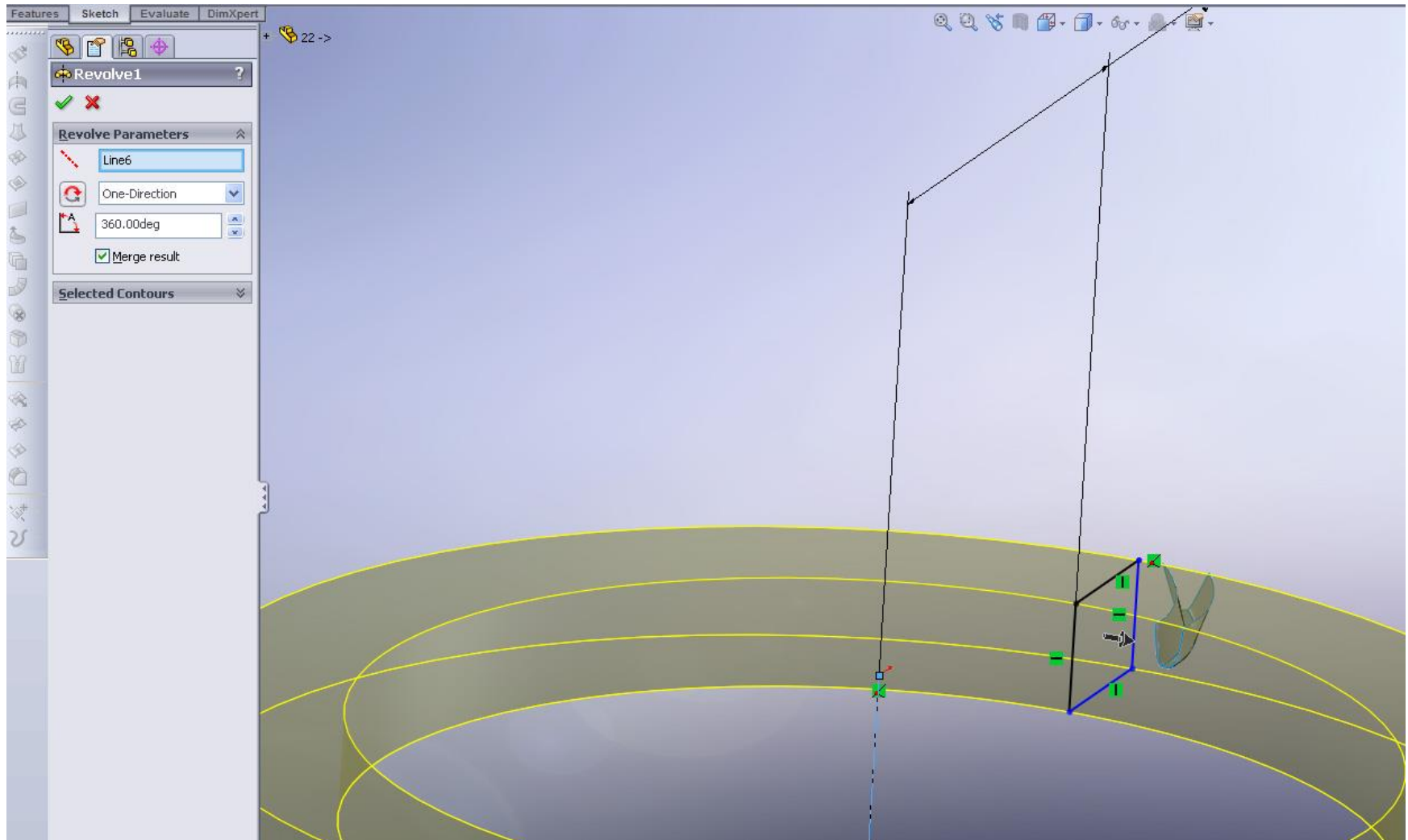
Build the root surface any way you like. This example shows smooth surface tangent to each flank.



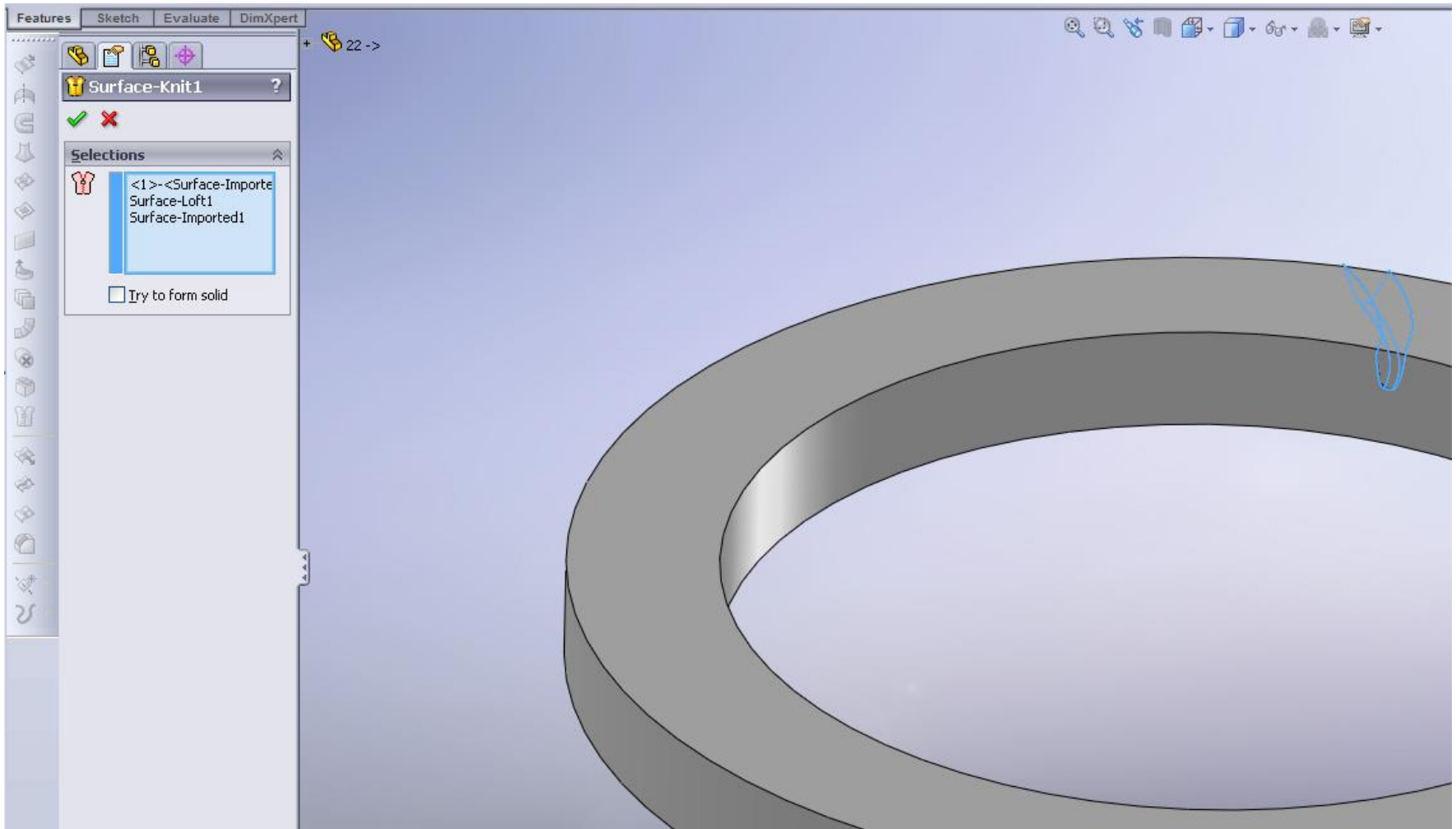
# Sketch the gear blank.



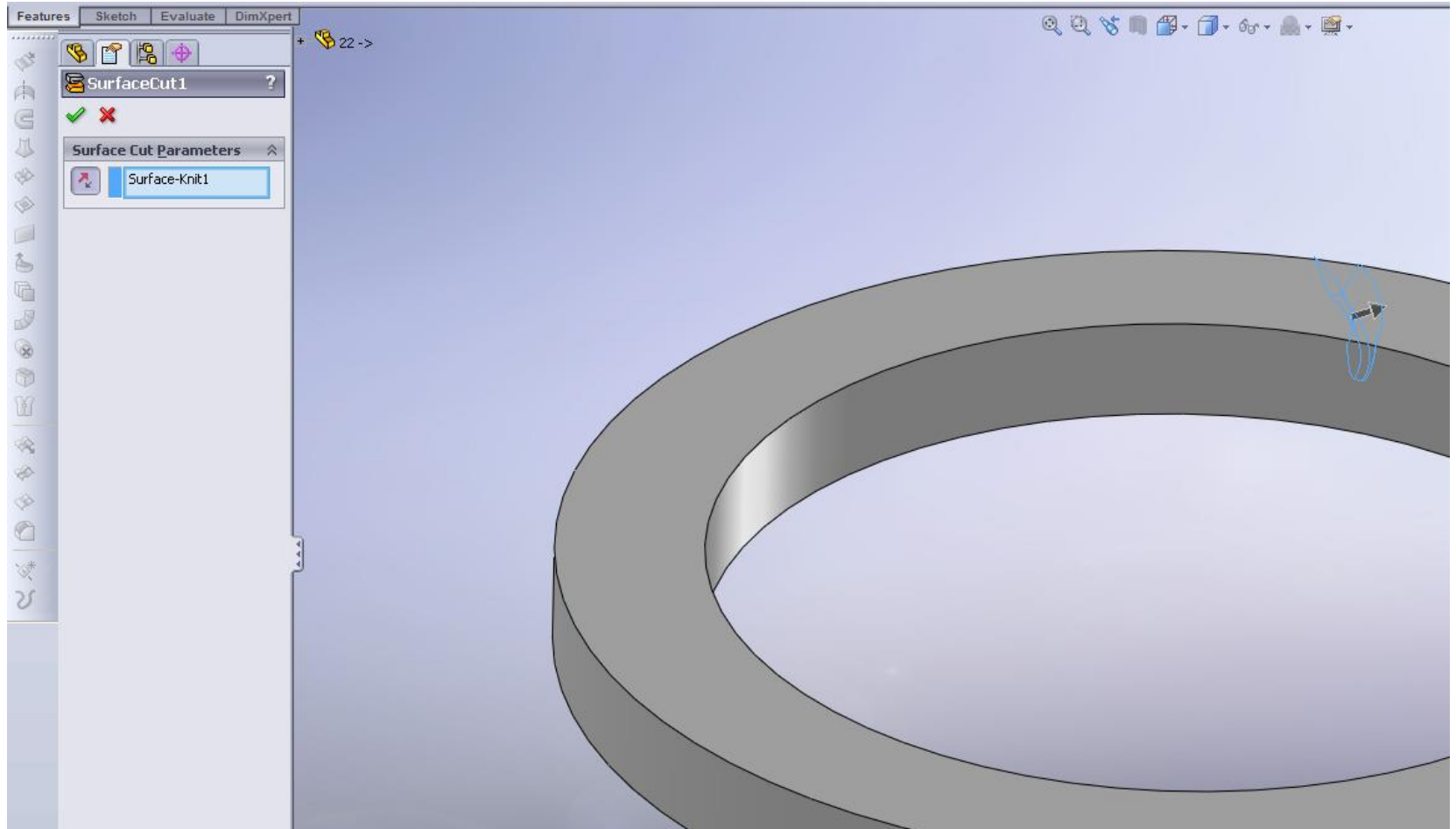
Make the gear blank from sketch.



Connect both flanks and the root surfaces into one surface.

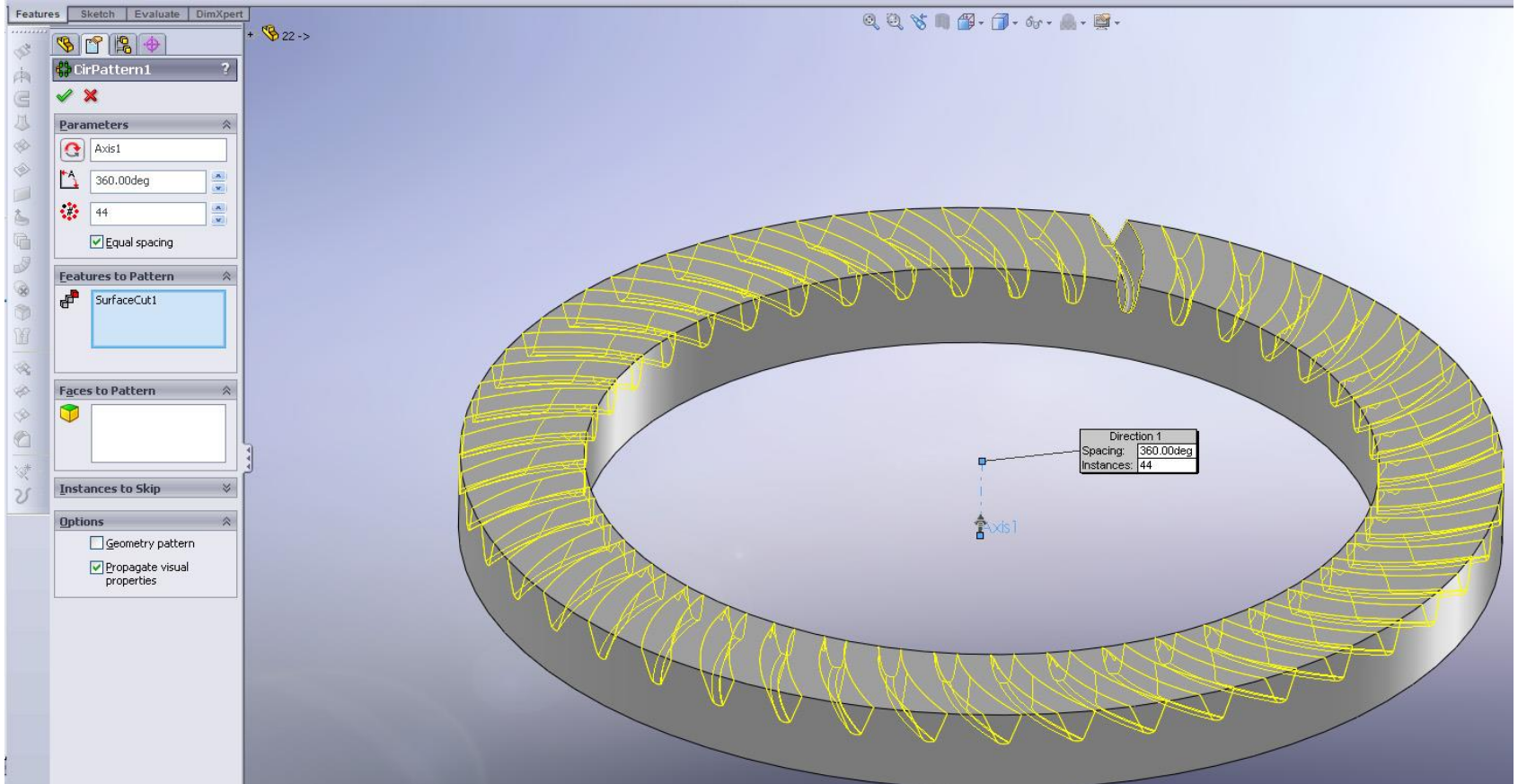


Cut the blank with the surface.





# Circular pattern the slot for number of teeth



Use the final 3d CAD model for manufacturing and inspection.

