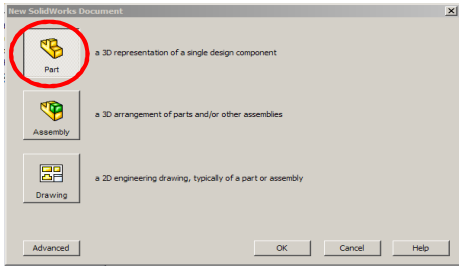


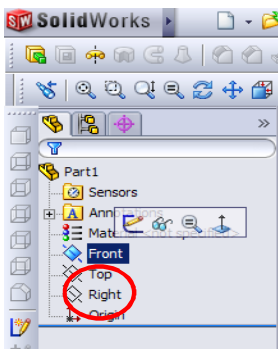
# Creata a Bolt - Beginner Tutorial

## 1 Extruded Boss/Base

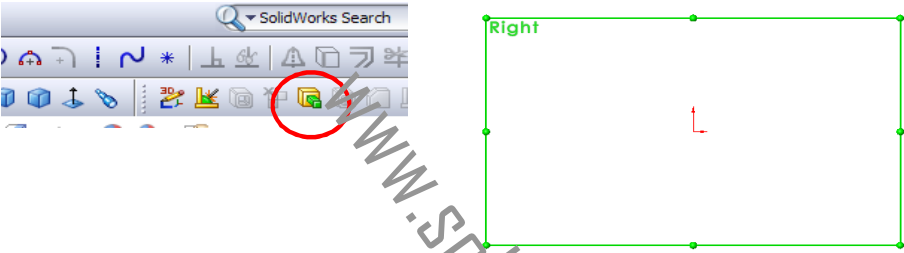
1. Click **NEW** ----> Click **PART**



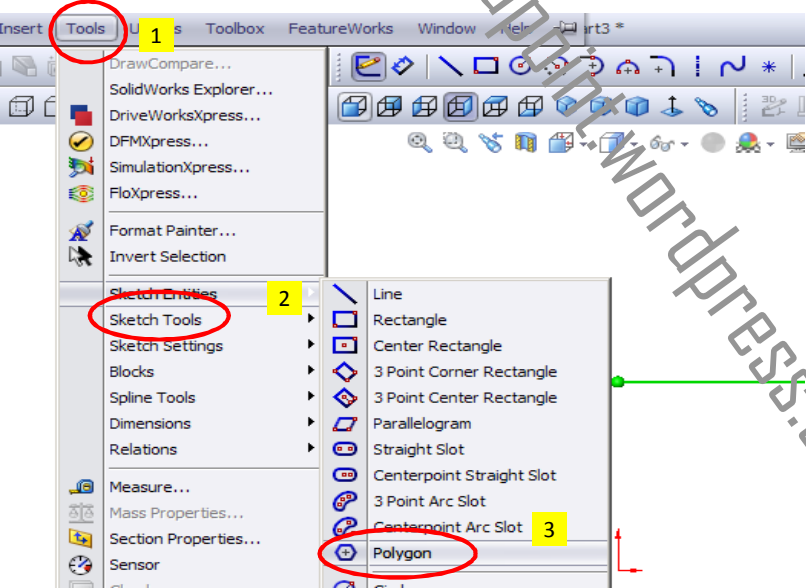
2. Click **Right**



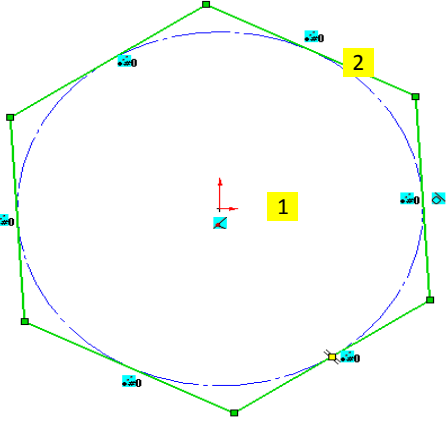
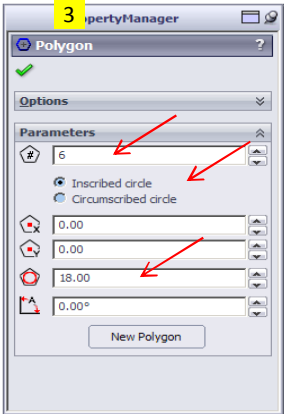
3. Click **Extruded Boss/Base**



4. Click **Tools** ----> **Sketch Tools** ----> **Polygon**

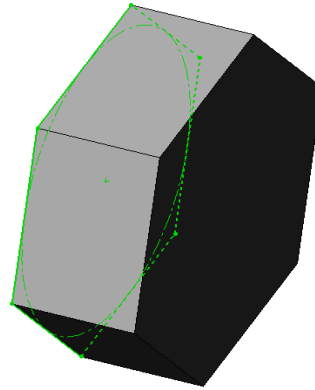
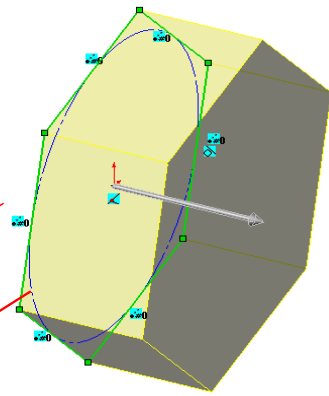
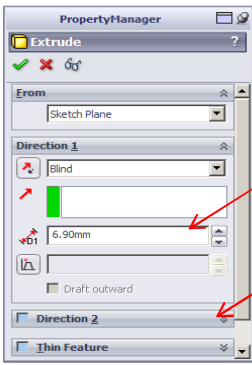


5. Click **Origin** ----> Make **Polygon Sketch** ----> **Insert dimension in Property Manager** ----> click **OK**  
**Set Number of Sides in Parameter 6.**  
**clik Inscribed circle.**  
**Set Circle Diameter on 18.**

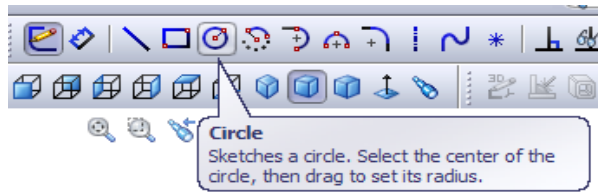
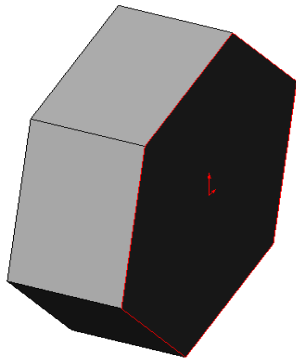


6. Click Extruded Boss/Base ----> in Property Manager

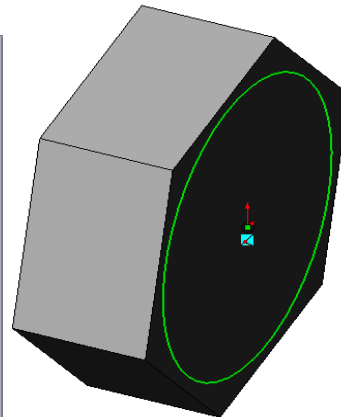
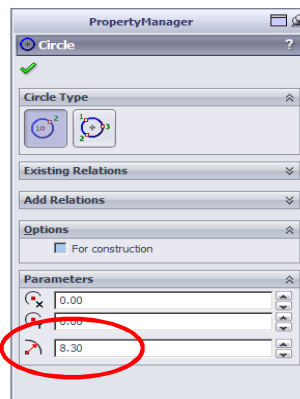
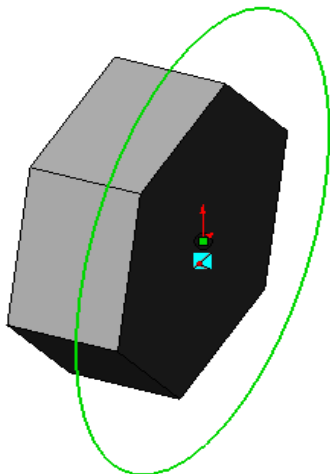
Choice **Blind** ----> **Click OK**  
D1 input 6.9



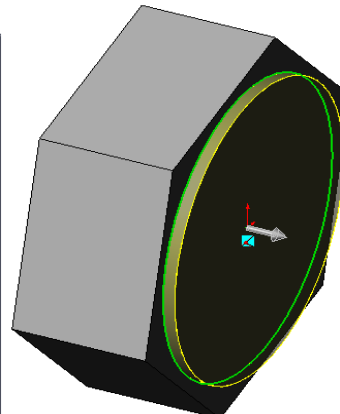
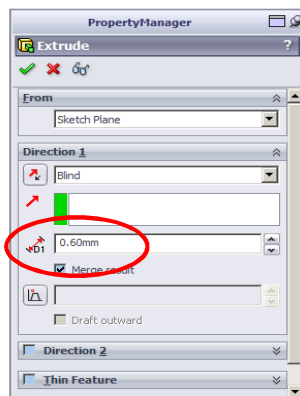
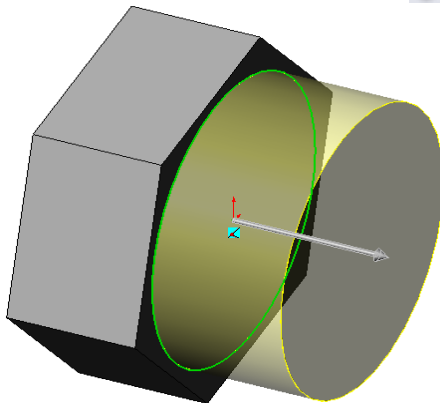
7. Click Extruded Boss/Base ----> Click Surface part ----> Click Circle in menu Bar



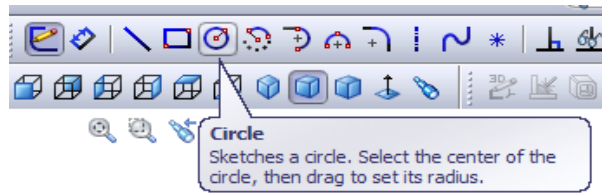
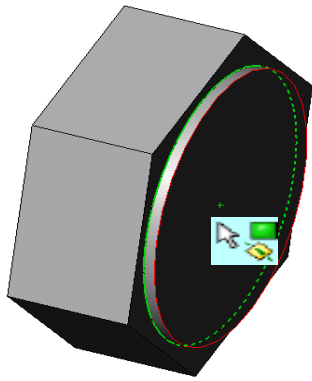
8. Make circle from Origin Point ----> setting Radius 8.3



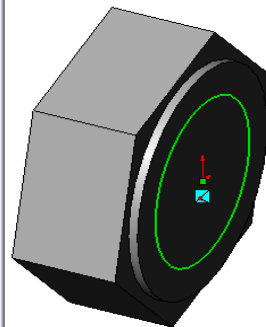
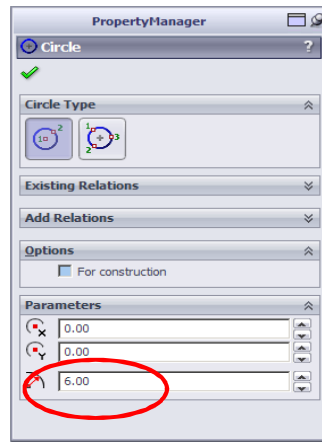
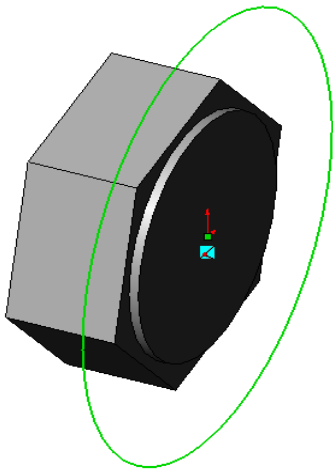
9. Exit Sketch ----> insert D1 0.6 ----> **K**



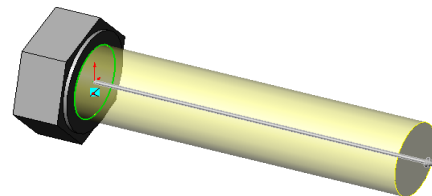
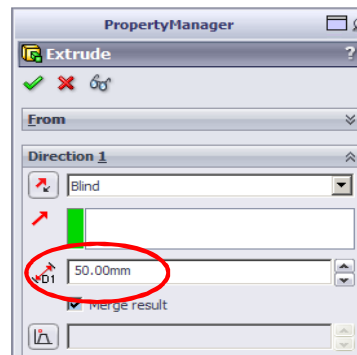
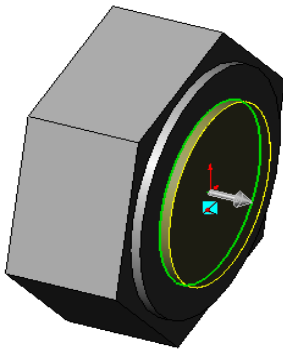
7. Click Extruded Boss/Base ----> Click Surface part ----> Click Circle in menu Bar



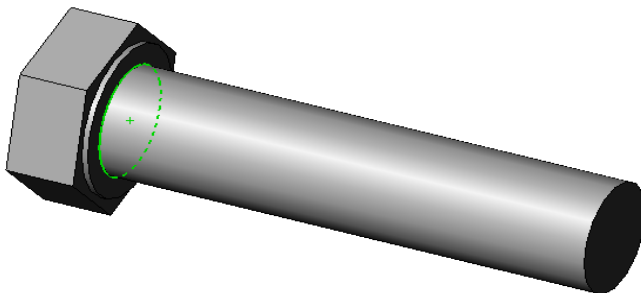
8. Make circle from Origin Point ----> setting Radius 6



9. Exit Sketch ----> insert in property manager D1 50

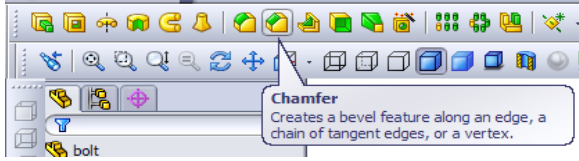


10. Click OK 

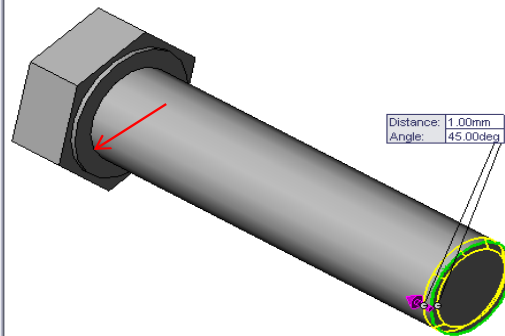
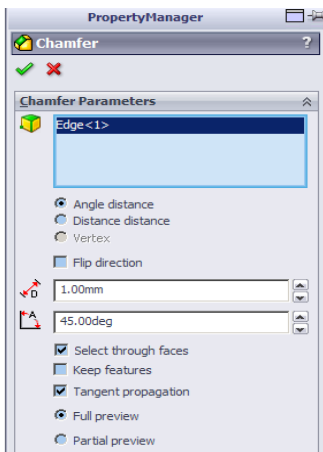
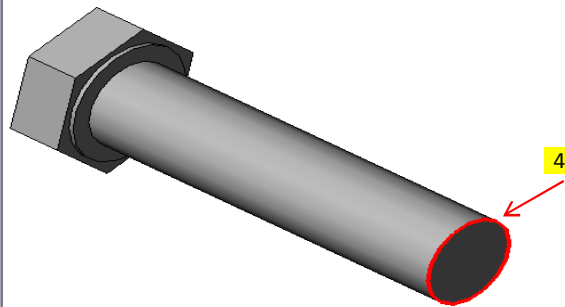
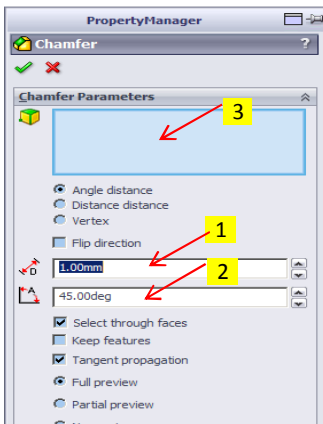



## 2 Used Chamfer

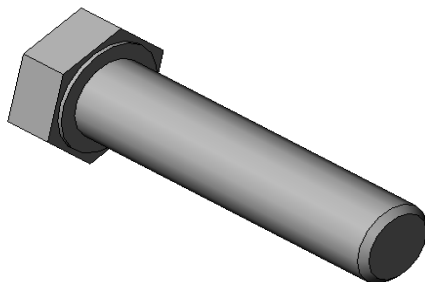
1. Click Chamfer



2. click Edge<1> from Extrude3 on Edges and Faces or Vertex. Than Click no 4  
Set Distance to 1.  
Set Angle ke 45.



3. Click OK 

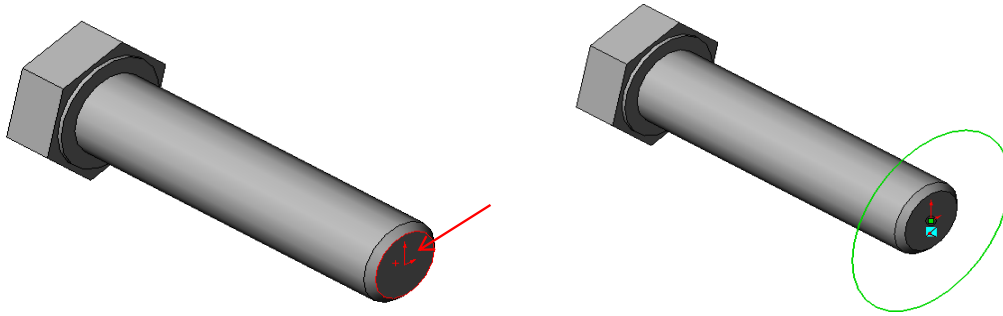


## 3. Sket Helix dan Cut Sweep

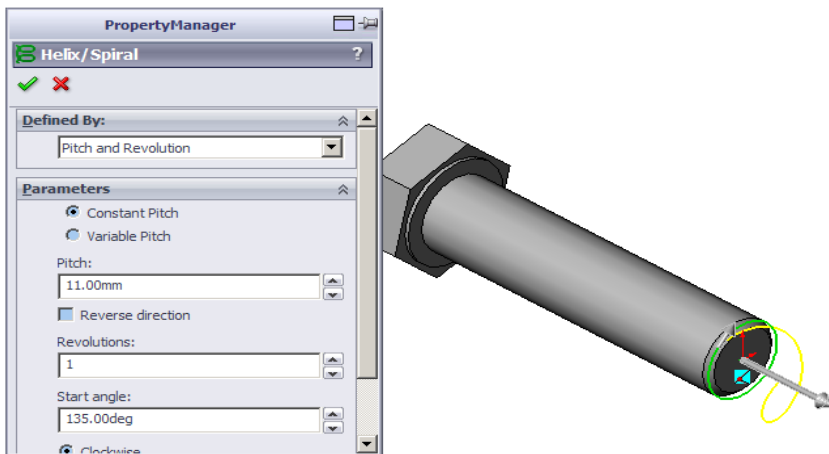
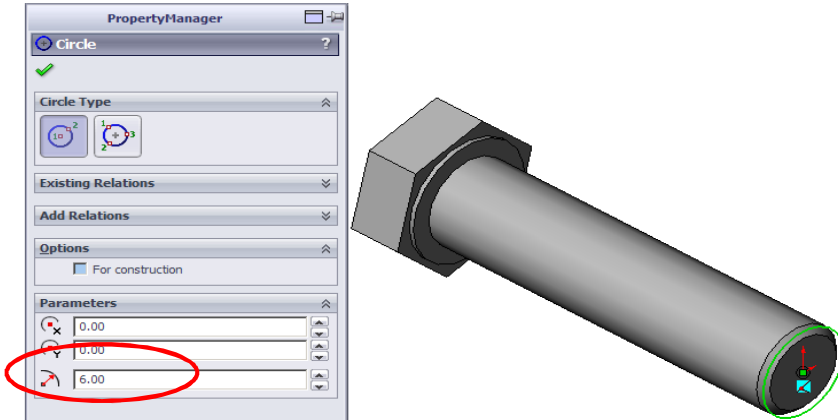
1. Click Helix dan Spiral



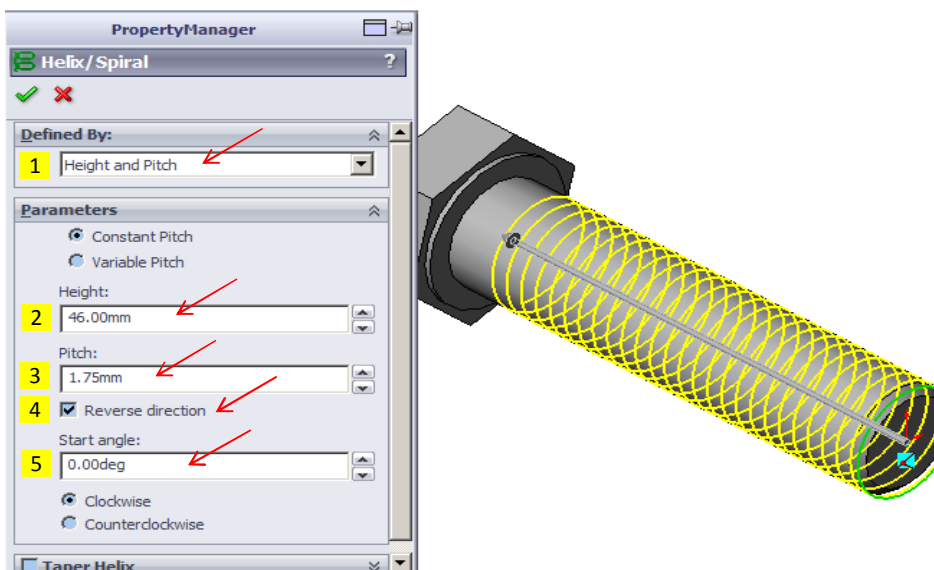
2. Click surface part ----> Clk Circle on Sketch toolbar ----> in Origin make Circle Set




3. Set Radius to 6 ----> Exit Sketch

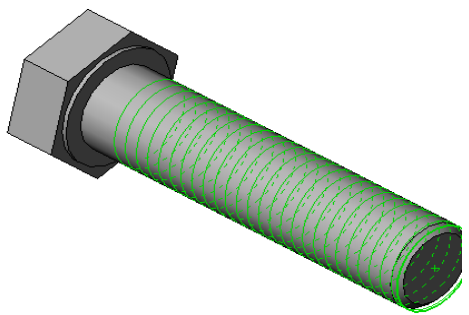


4 in Property Manager, insert point of Parameters:

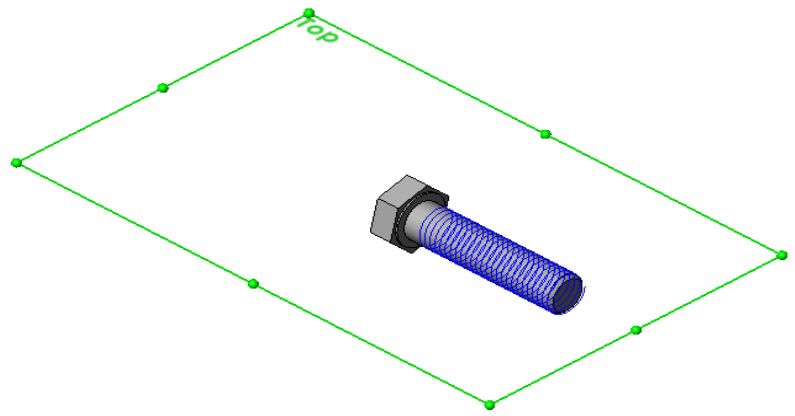
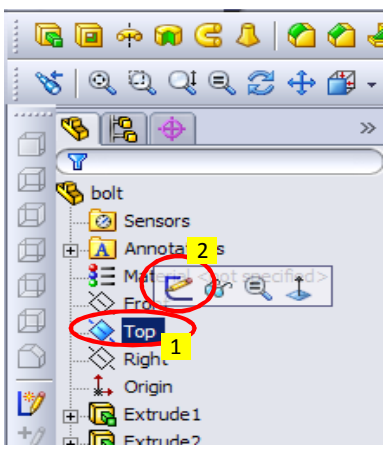


- 1 Choice **Height and Pitch**.
- 2 Set **Height to 46**.
- 3 Set **Pitch to 1.75**.
- 4 Clk **Reverse direction**.
- 5 Set Start **Angle to 0**

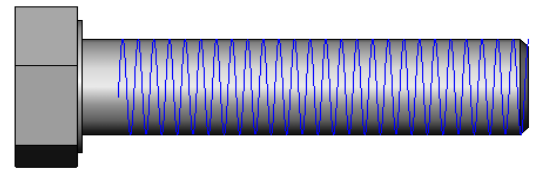
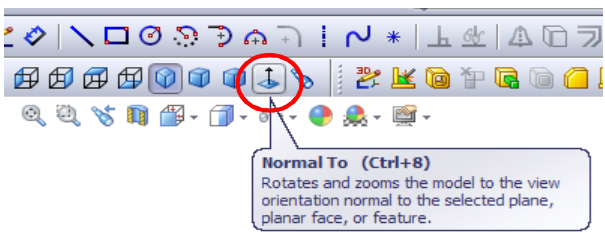
5. Click OK 



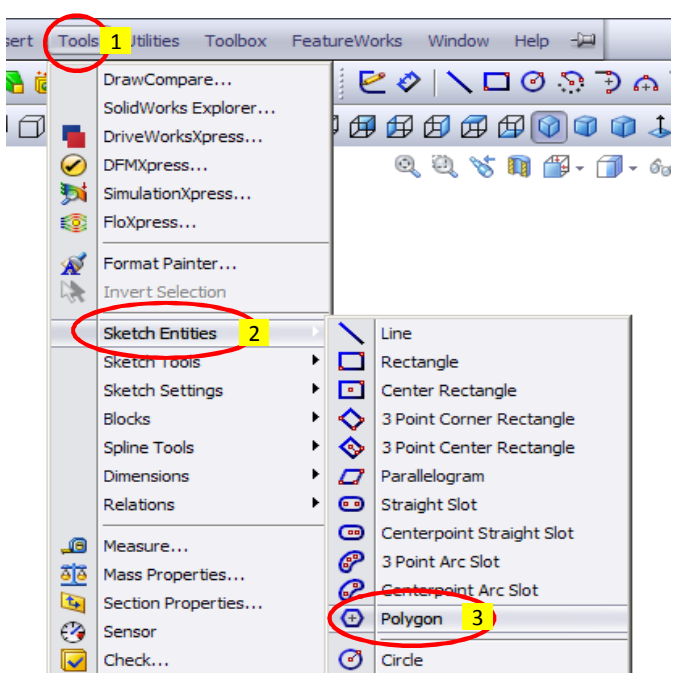
6. In **Feature Manager** design tree click **Top Plane**, Click Right Mouse and choice **Insert Sketch**



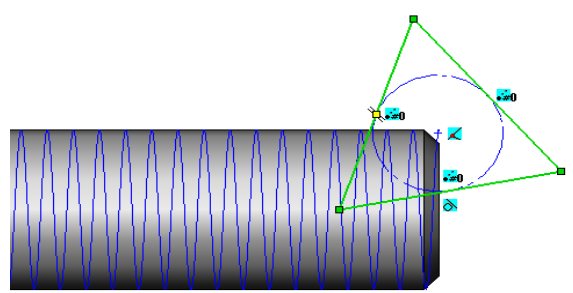
7. Click **Normal To** in **Standard View Toolbars**



8. in **Toolbar Menu**, choice **Tool**, **Sketch Entities**, **Polygon**

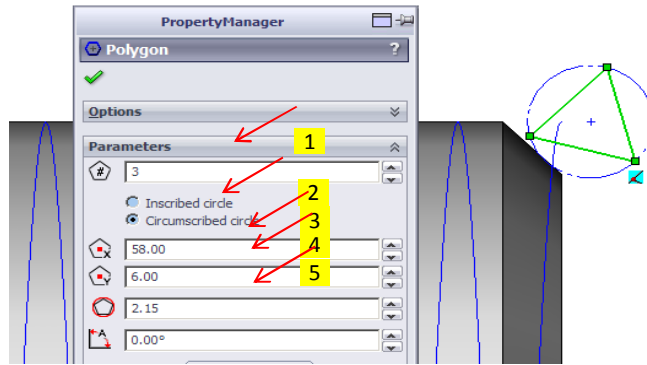


9. Direction of pointer to up right part ,Click, than moved pointer down vertical to make a polygon. this is difcult move,much practice for this

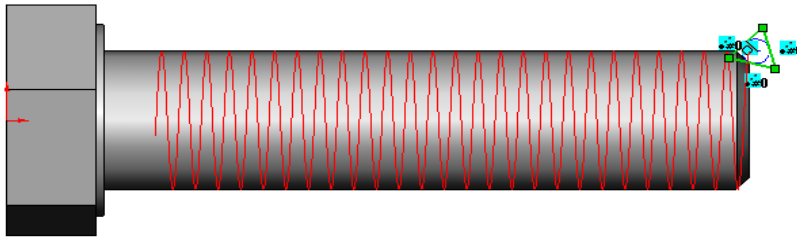


### 10 .In property Manager insert dimension

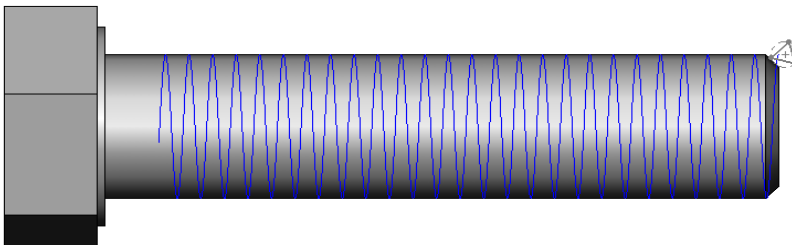
1. Number of Sidesto 3
2. Click Circumscribed circle
3. Set Center X Coordinate to 58.
4. Set Center Y Coordinate to 6.
5. Set Circle Diameter t 2.15



11. Click OK

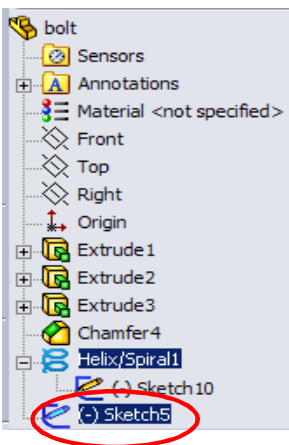


### 12 Exit Sketch

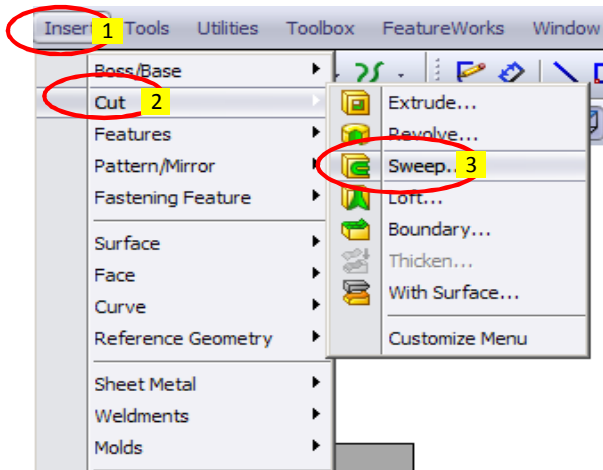


### 13. Cut Sweep

1. in FeatureManager design tree (Helik/spiral) Klik Sketch 5

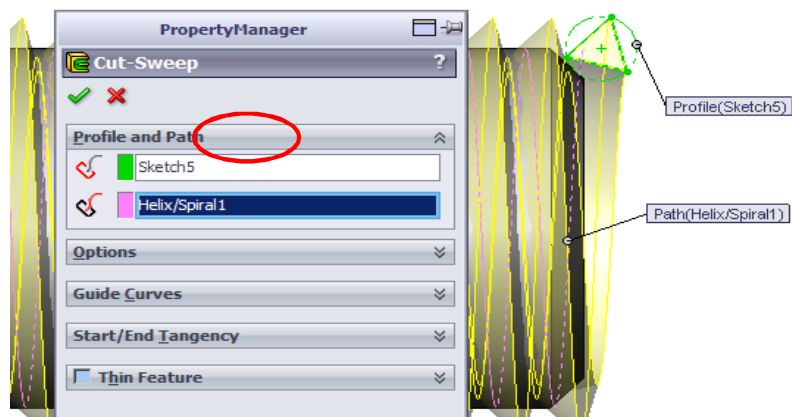


14. in Toolbar Menu, pilih Insert, Cut, Sweep

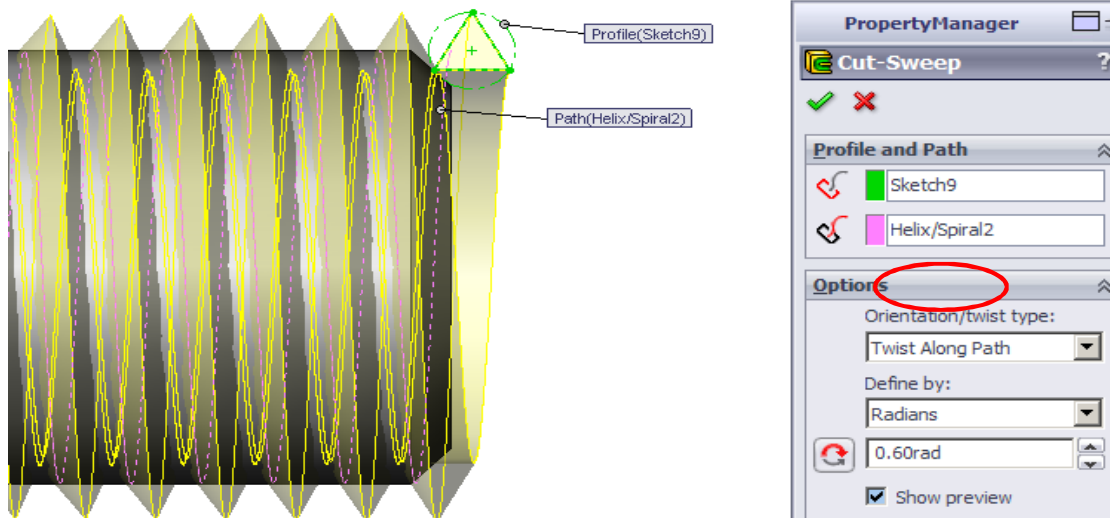


### 15. In Property Manager, Choice Profile dan Path:

- klik Sketch5 Path
- Click Helix/Spiral1 on Path.

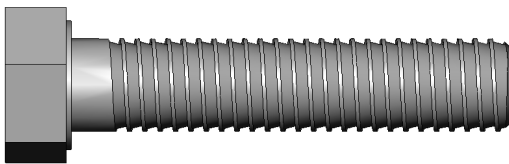


some case maybe you failure in this section try another option like bellow



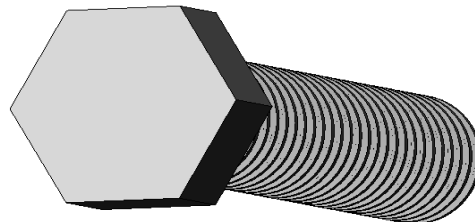
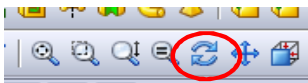
- 1 in Toolbar Menu, choice Tool, Sketch Entities, Polygon
- 2 Make sketch and input like step no 10
- 3 Make sure triangle of **straight polygon**, as figure above
- 4 In property Manager use **Option** chose in Orientation/twist type in : **Twist along part**  
in Define by chose : **Radian**  
in **Reverse direction** Chose point you will draw

16. Click OK

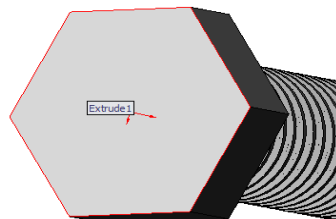
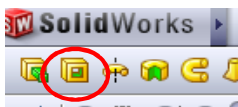


## 5. Make Half Circle

1 use Rotate View to the object



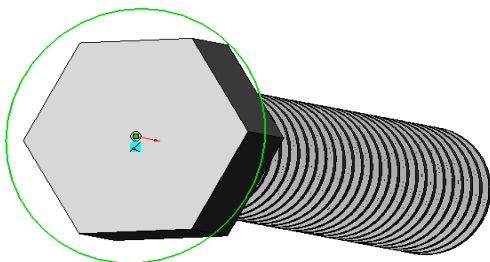
2 Click Extruded Cut on Features toolbar



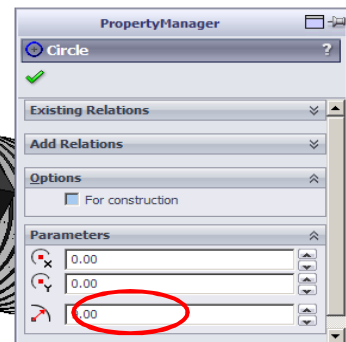
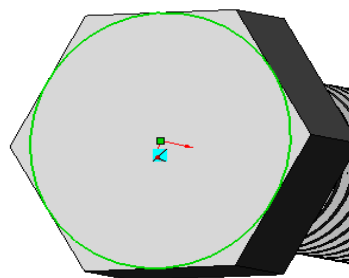
3 choice the Surface

4 Click Circle on Sketch toolbar

5 Make Circle in Origin Point

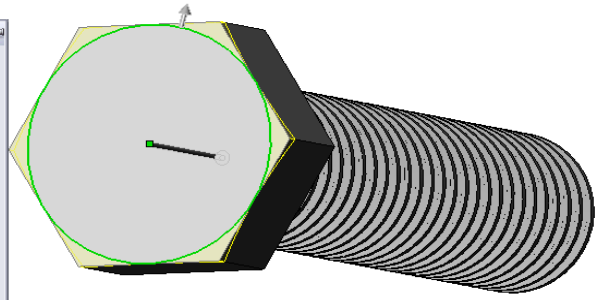
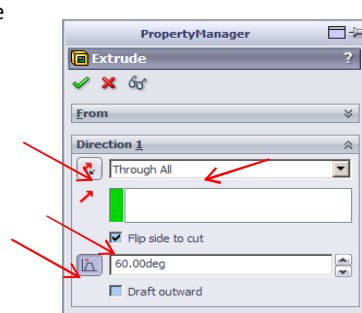


6 Set radius on 9 than Exit Sketch



## 7. Pada Property Manager, dibawah Direction 1:

1. Click Through All from End Condition.
2. set reverse direction to inside
3. klik Flip to side cut
4. Set Draft Angle to 60.



## 8. Klik OK untuk membuat **cut extrusion**

