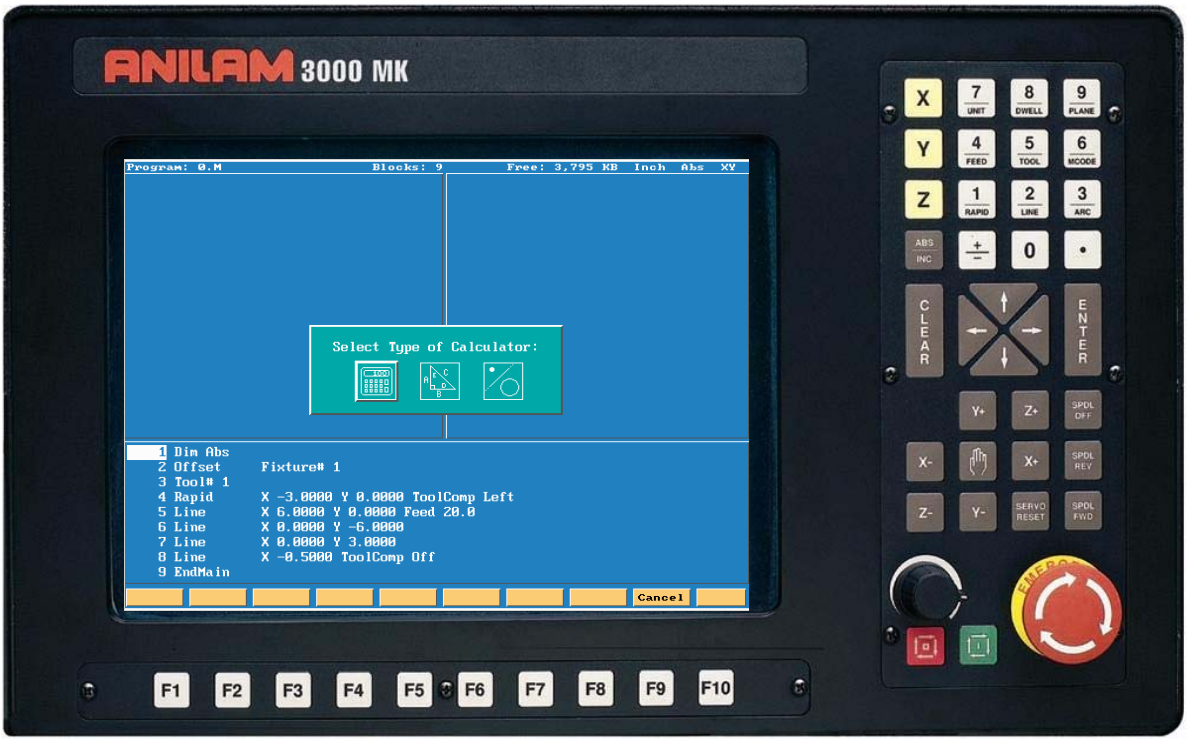
ANILAM

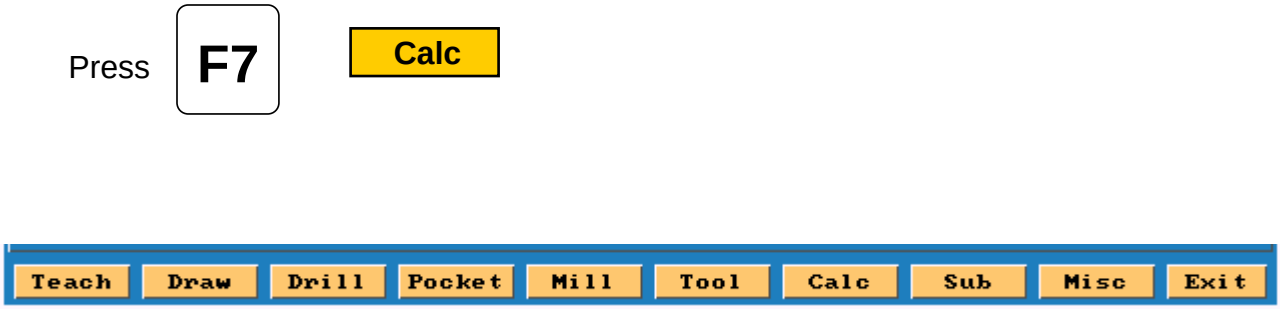
# Using the Calculators




By Robin Baker

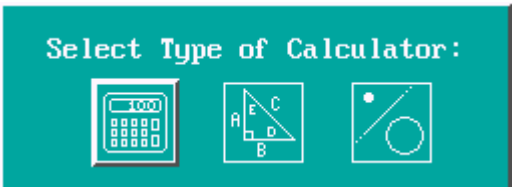
To get to calculator Press **F4**


Press **F7**



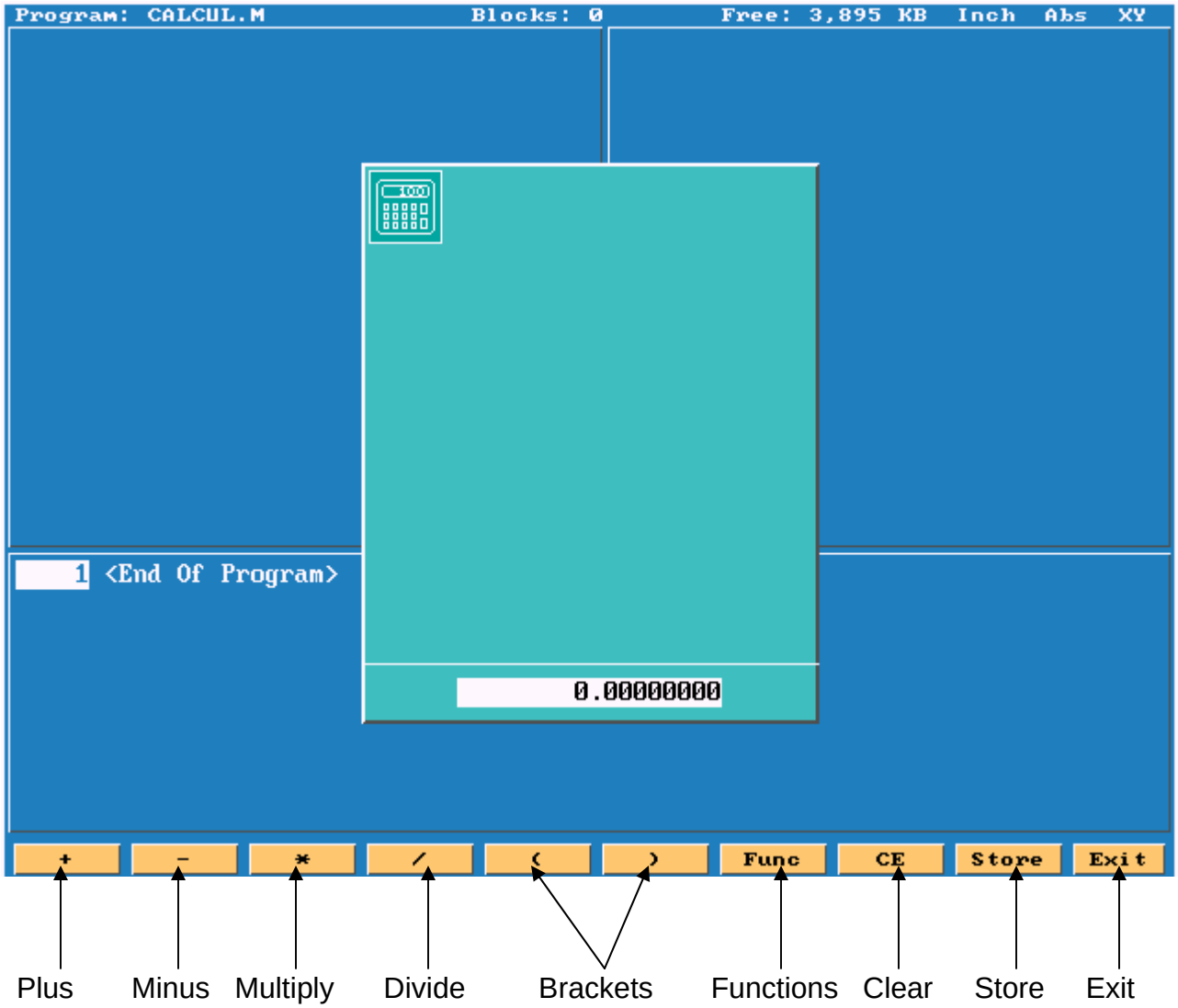

Box will appear as below.

1.Pocket.
2. Rightangled triangle.
3. Geometery

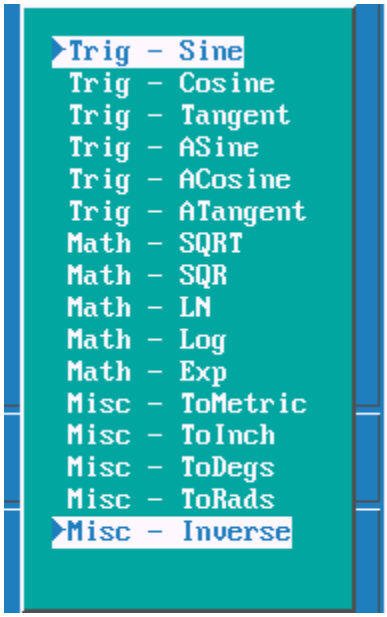



The box with the hight light around it is the active one. In this case it is the left hand box.

Press ENTER screen will appear as below.

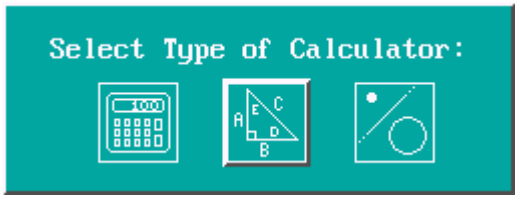


When F7 **Func** is press the listed functions are available.

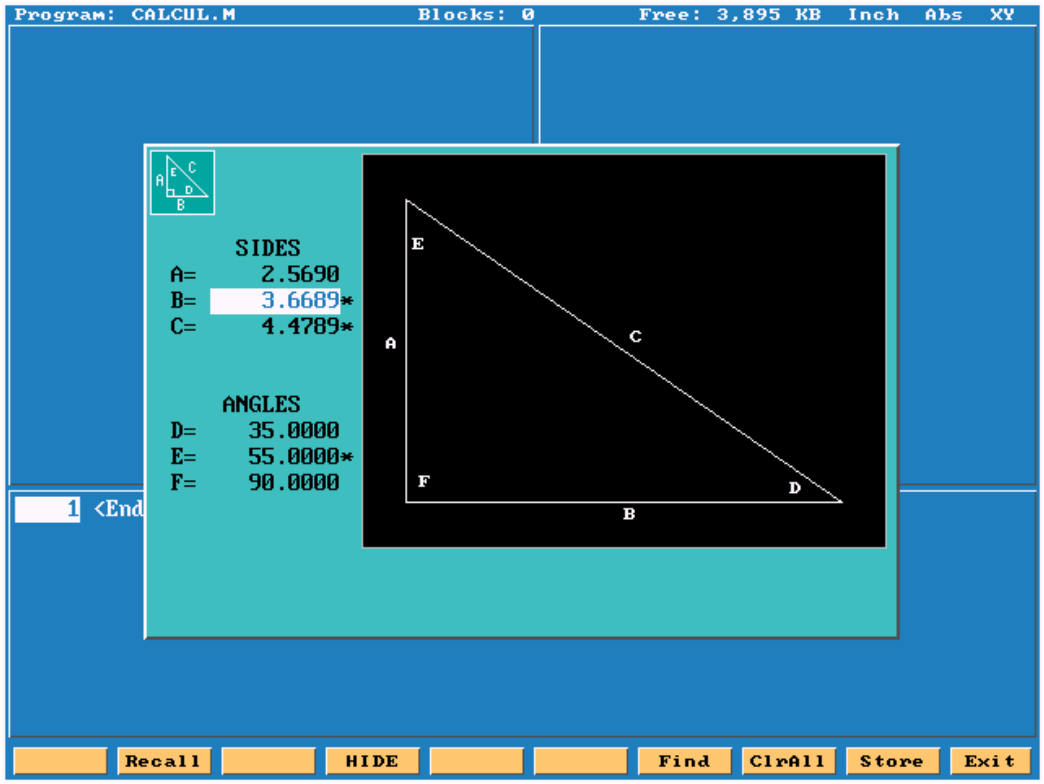



These funtions allow you to do trig and math problems.

Hight light center icon , this is rightangled triangle calculator.

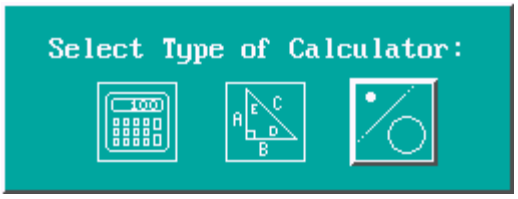



Press ENTER screen will appear as below.

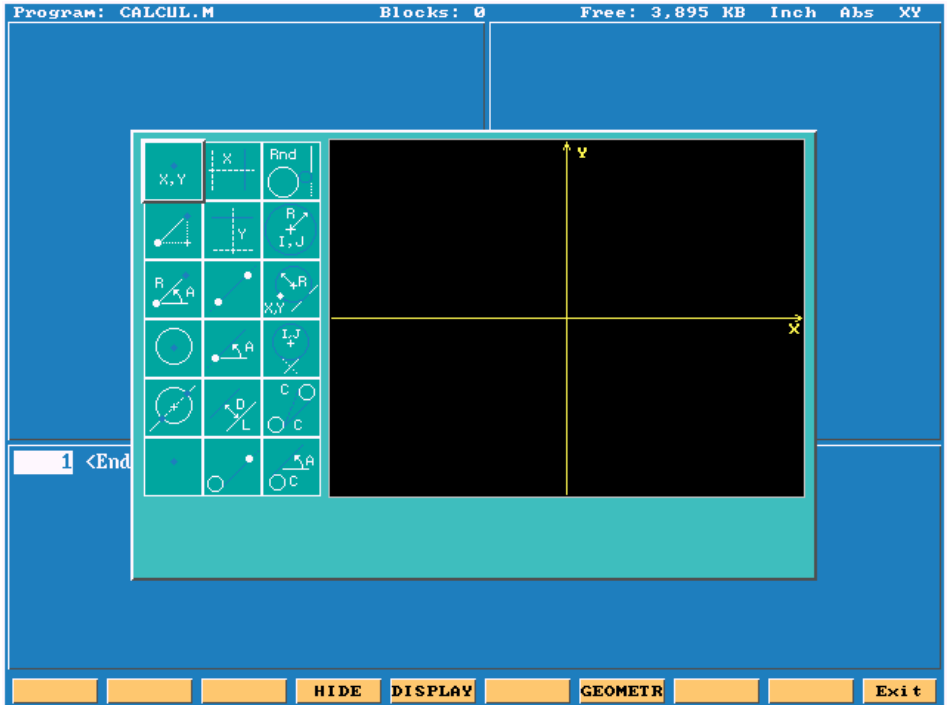



Enter any 2 sides or a side and an angle press F7 Find all of the blanks will be filled in , the calculated dimensions will have an asterisk behind them. They can be stored and recalled later into a program.

Hight light right icon , this is the geometry calculator.




Press ENTER screen will appear as below.

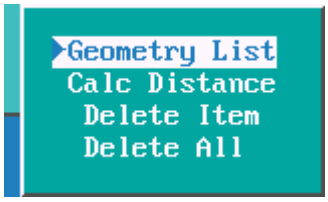



This calculator allows us to generate lines,points and circles. We will need to gererate poins at all intersections , as points are the only items we can recall.

The soft keys will appear as below.

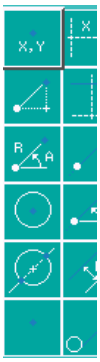

| | | |
|---|---|---|
| **F4** | **HIDE** | Allow you change from calculator to program mold. |
| **F5** | **DISPLAY** | See below |
| **F7** | **GEOMETR** | See below |
| **F10** | **EXIT** | Exit Geometry calculator. |


Fit to screen.
Zoom in to an area on the screen.
Redraw at current size.
Halfs the screen size.
Doubles screen size.




Lists all geometry.
Calculates distance between two points.
Deletes an item, need to give item number.
Deletes all geometry.

## Point Definitions



Point defined by co-ordinates **X** and Y

Point at a position **X & Y** from a previously defined point

Point at a distance **R** and an angle **A** from a previously defined point

Point at the centre of  a circle

Point at an **INTERSECTION** between 2 elements

Point previously defined

## Line Definitions

Vertical Line at a distance X from datum

Horizontal Line at a distance Y from part centreline

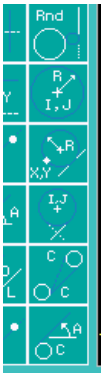
Line passing through 2 points

Line passing through a point at an angle **A**

Line parallel to another line **L** at a distance **D**

Line tangent to a circle passing through a point

## Arc Definitions



Circle tangent to 2 geometry elements

Circle defined by a Centre **I & K** with a radius **R**

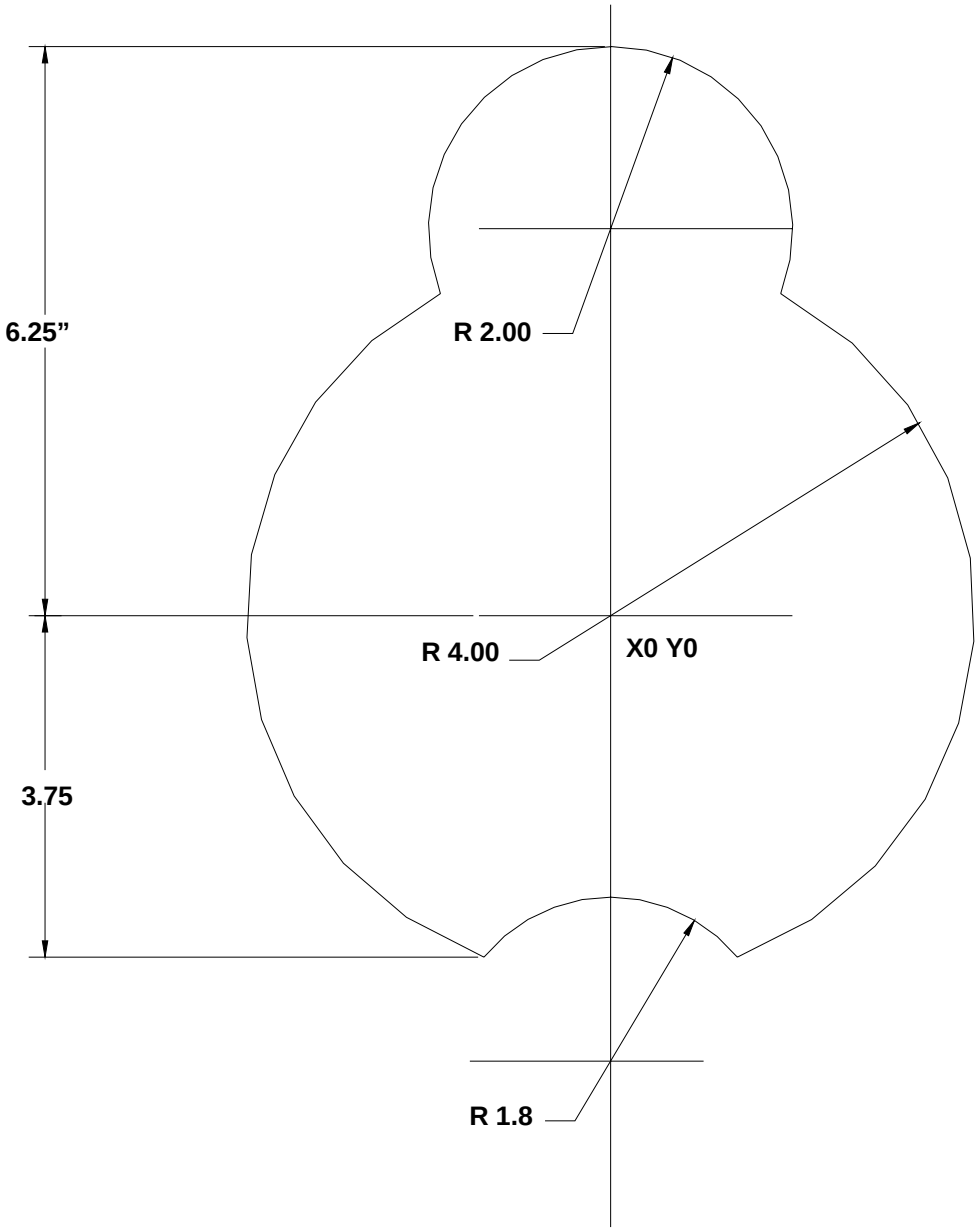
Circle passing through a point **X & Y** with a radius **R**

Circle tangent to a line with a centre **X & Y**

Line Tangent to 2 circles

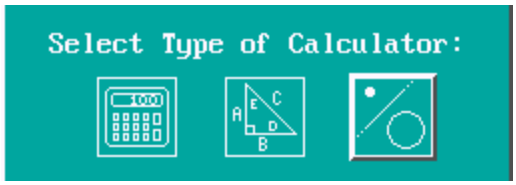
Line tangent to a circle at an angle **A**

From the drawing below we are going to get all points required to program an irregular pocket.

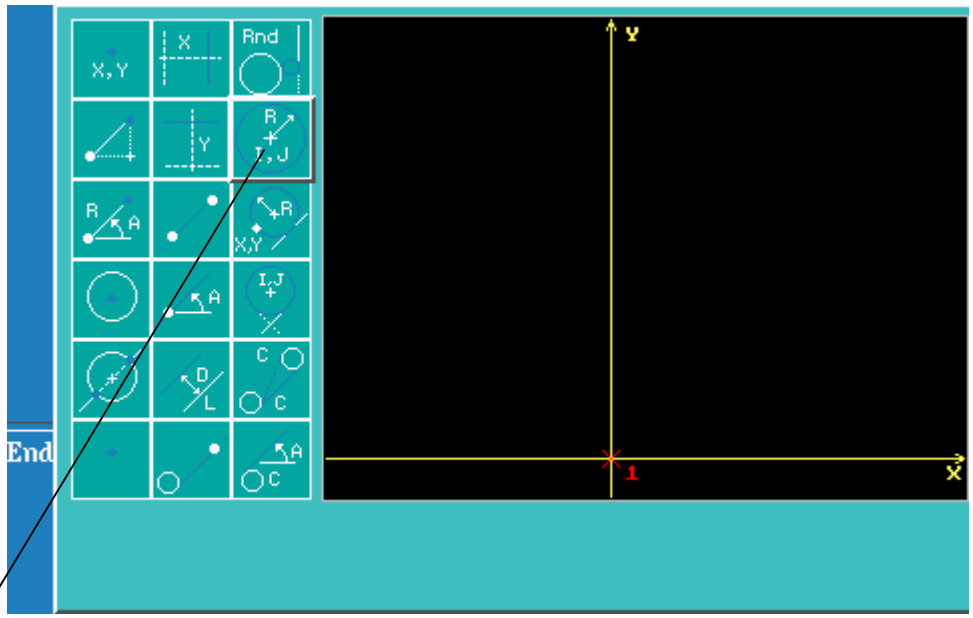


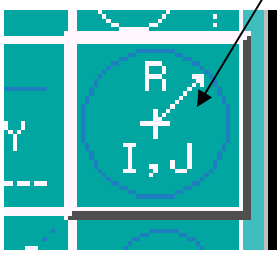
The first element to find is the 4.00 circle

Press **F4** **Edit** press **F7** **Calc**

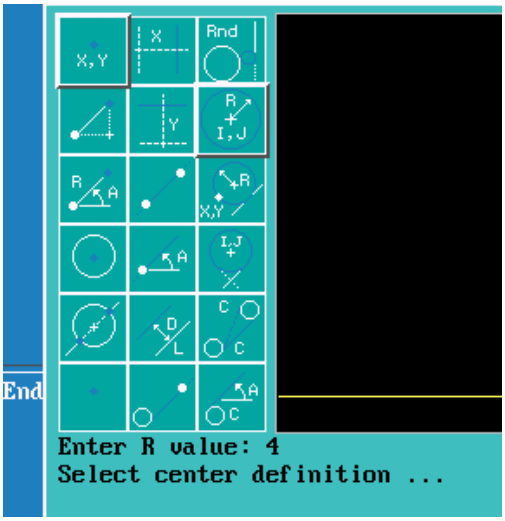



The third icon is hight lighted press **ENTER**



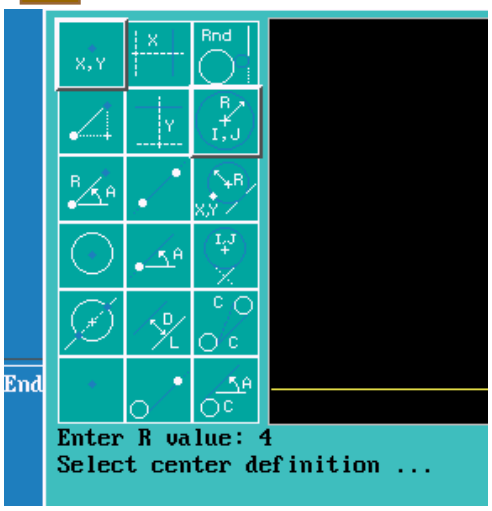




Press **ENTER**




When ENTER is pressed screen will ask for Radius value, in this case 4., zero's not required.

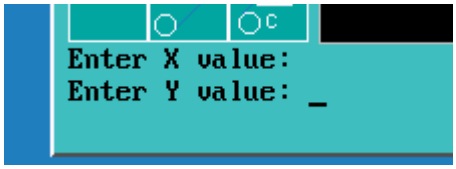
Press ENTER It will now ask for a center definition and top left icon is hight lighted. This is one to use in this case.




Press ENTER

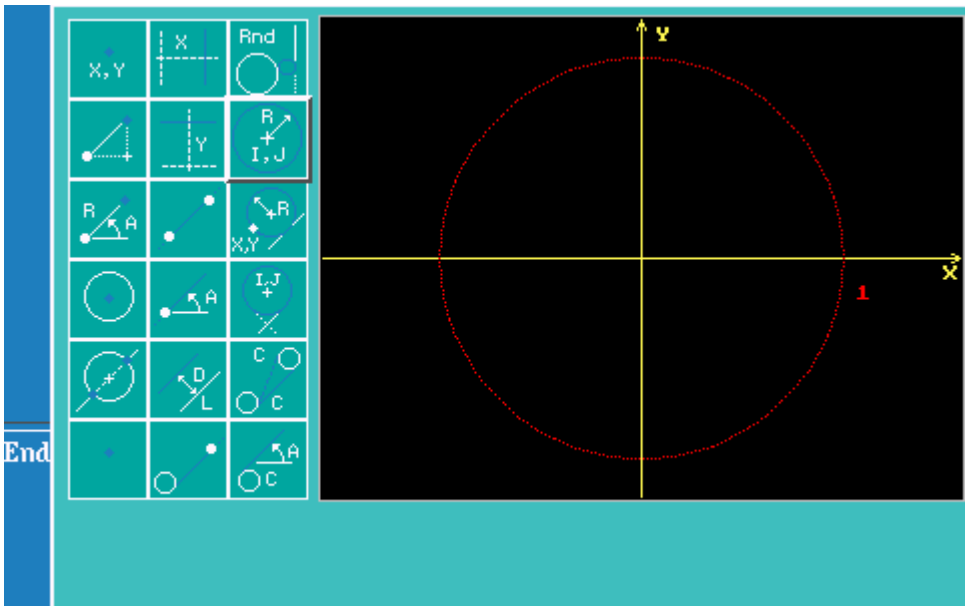
It will now ask for an X value, in this case it 0 ,so press ENTER

It will now ask for an Y value, in this case it 0 ,so press ENTER

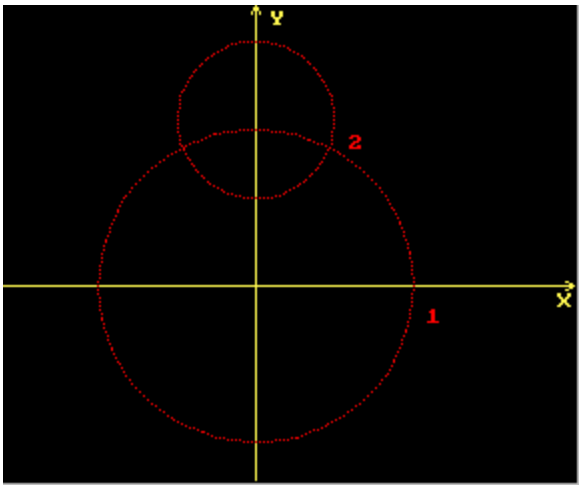



The circle will now appear on the screen, if it show as a dot on screen

press F5 DISPLAY select **FIT** press ENTER



The 2” circle will now be entered. Use the same icon as before.
Radius 2” use same center icon **X 0** and **Y4.25** press **ENTER.**



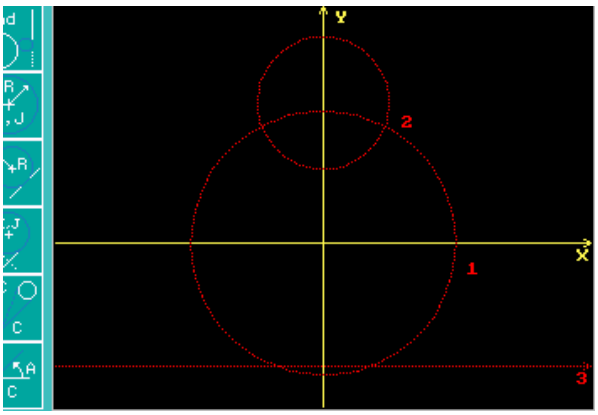

Second circle will now appear on screen, it may be necessary to fit again.

**Note:** The first circle has a 1 beside it and second has a 2. Each element will be numbered.

The next element we need is a line at **Y**-3.75.


Select **Y** Line icon and enter -3.75.

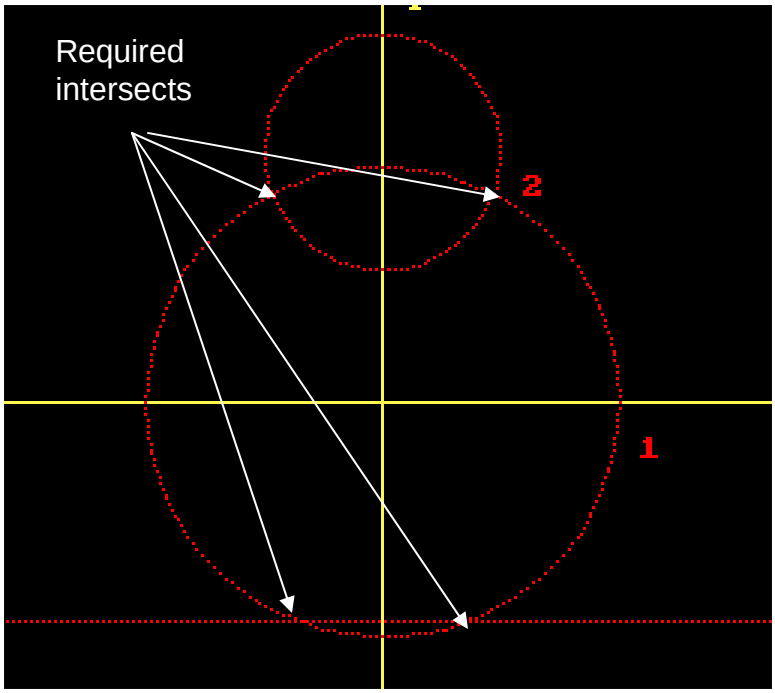
ENTER




There is now an element 3.

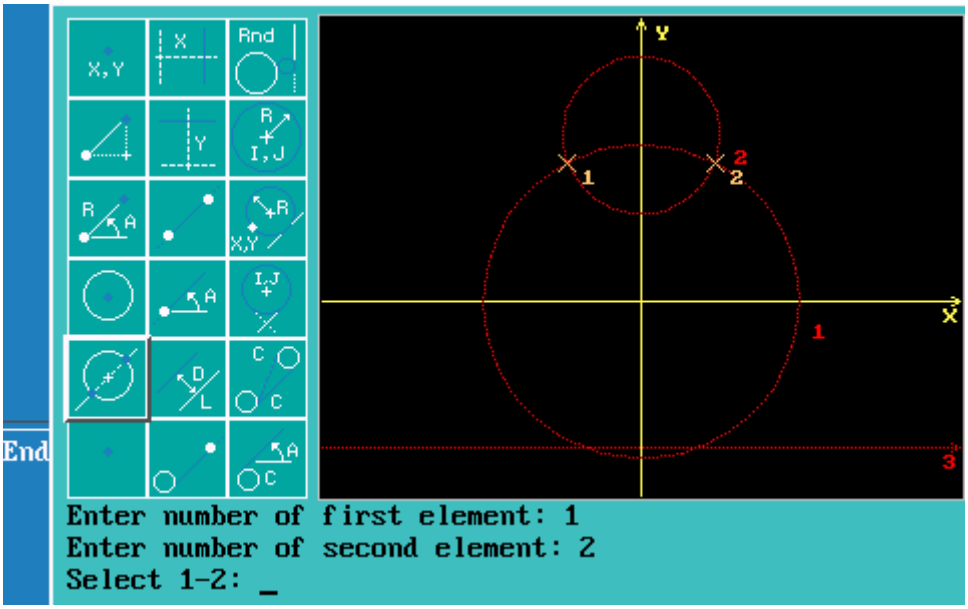
There is now enough geometry to find all the intersect required to program this part.

It is only possible to recall points into a program, so the thing that has to be done is find the points at all intersects using the icon below.

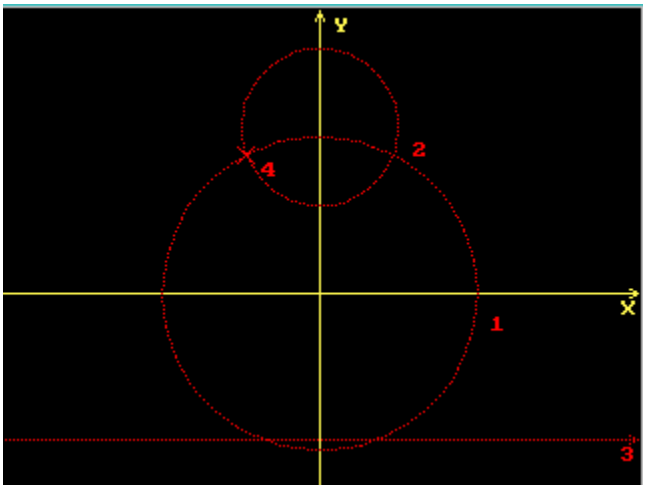



The first intersect is between element 1 & 2 on the left side.

Select the icon with a line going through a circle.

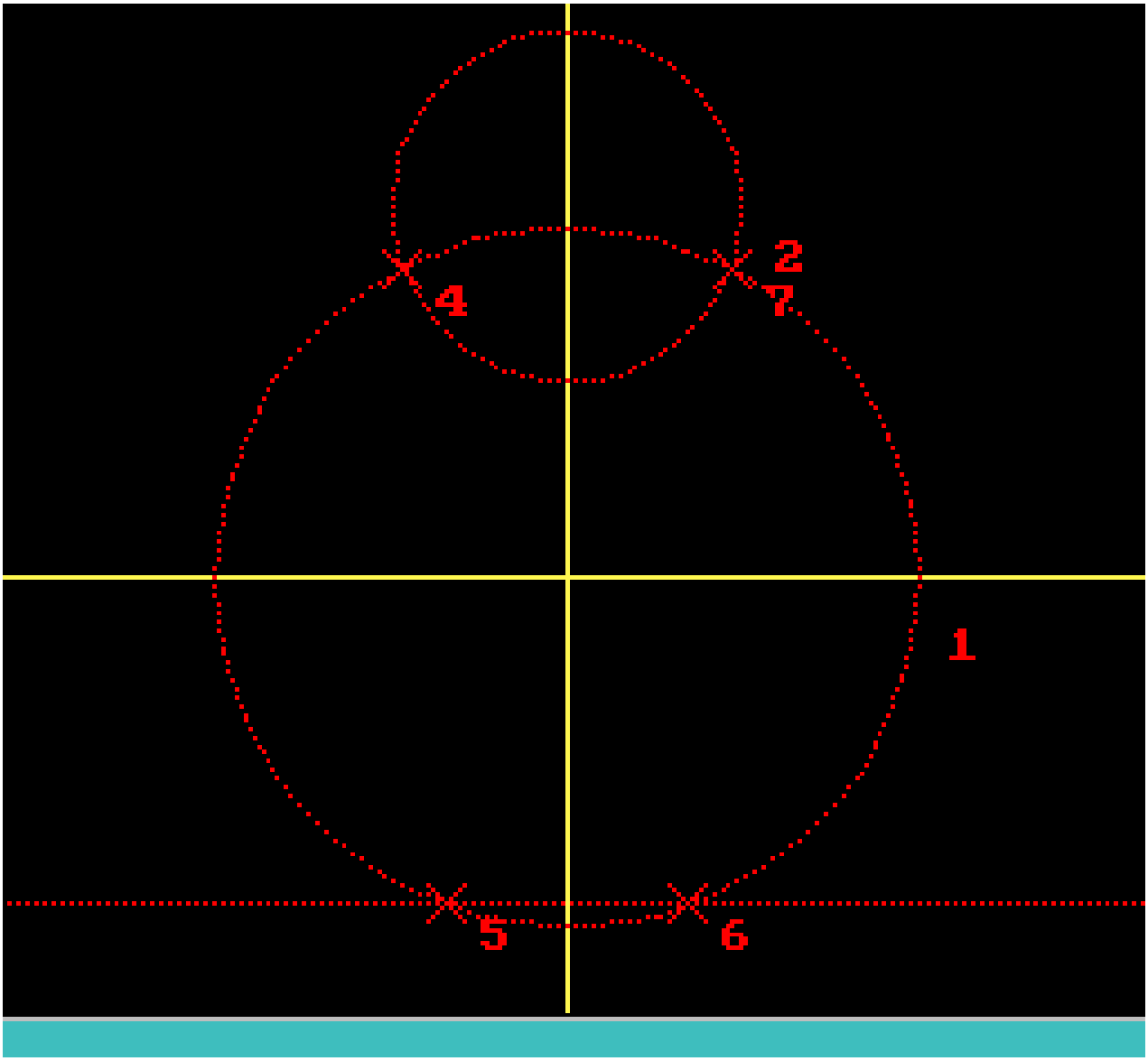



Press ENTER select first element #1 select second #2, as there are two intersects there is a choice of 1 or 2 in this case the desired one is #1.



There is now an element #4 which is the intersect between #! And #2.

Using same icon,find intersects between ! & 3, two places and 1 & 2 right side.



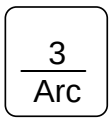

Above is completed geometry, with all intersections marked with a point.

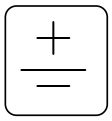
**Writing program to pocket this shape.**

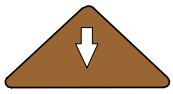
Below is how main program would look, the next thing to do is write the profile of part to be pocketed.

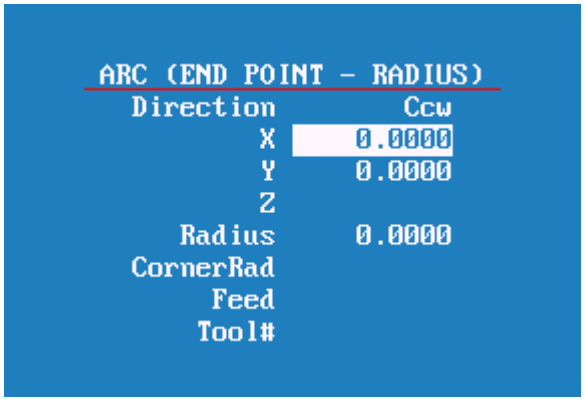
```
Dim Abs                                  * Absolute dimensioning
Rapid      Z 0.0000  Tool# 0             *Clear all offsets
Tool# 1                                  * Call tool #1
Pocket              Sub#1 StartHgt 0.1000 Zdepth -0.2500 Angle200 Stepover 0.3500
                    FinStock 0.0100 RampFeed 2.0 RoughFeed 15.0 FinFeed 15.0
                                         *Pocket cycle requires a subroutine of profile.
                                         *Cutter compensation is built into cycle.
                  *Angle is because of starting on a radius.
Rapid      Z0.0000 Tool# 0
EndMain
Sub 1                                    * Subroutine #1
Rapid      X 0.0000  Y6.2500             * This is the top 2" circle and the start point.
```

The next point needed is intersect between 2"radius and 4" radius circles.

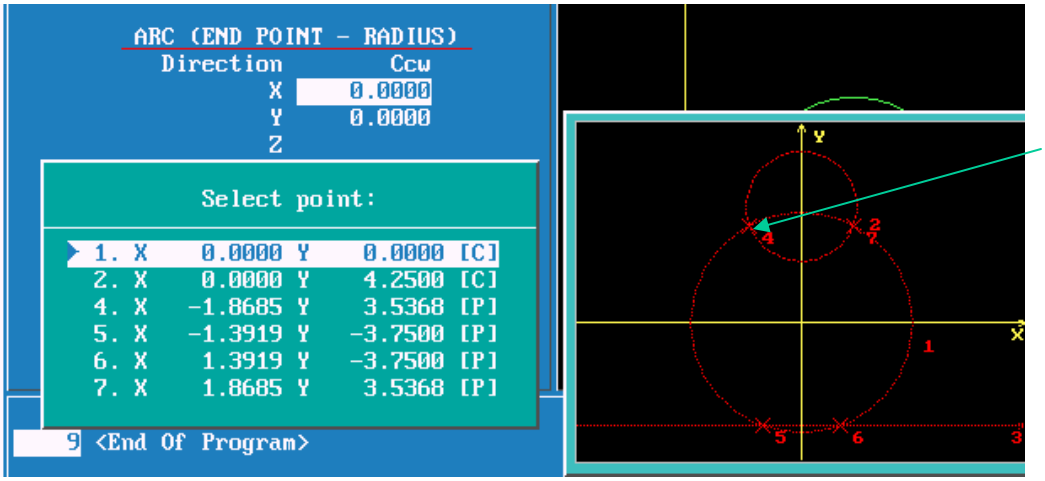
Press #3 

to access arc menu. To change direction of arc press 

Press  down arrow key,high light will be on X

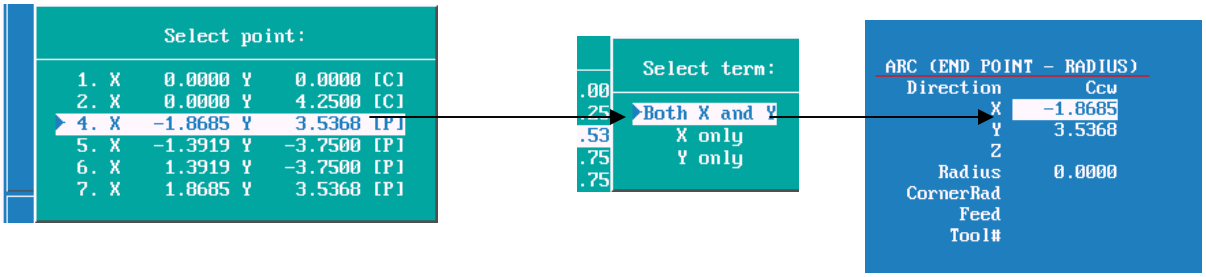


Press **F2** **Recall**

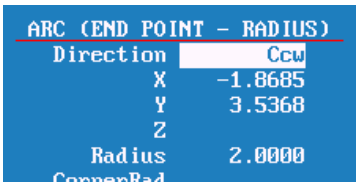



The letter C at end of line means circle center and P means point.

Move high light down to #4. Using  key press **ENTER** press **ENTER**




Dimensions for X & Y will be input into program, move cruser down to Radius enter 2" .




**F10** **Save**

The same can now be done with points 5,6 & 7, the last point will be the same as the first X0 Y6.26 end point of 2” arc.

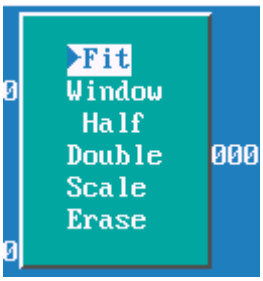
The following is how the program should look when complete.

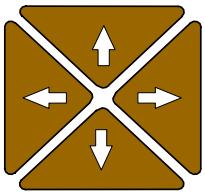
```
Dim Abs
Rapid      Z 0.0000 Tool# 0
Tool# 1
Pocket     Sub# 1 StartHgt 0.1000 ZDepth -0.2500 Angle 200.0000 Stepover 0.3500
FinStock 0.0100 RampFeed 2.0 RoughFeed 15.0 FinFeed 15.0
Rapid      Z 0.0000 Tool# 0
EndMain
Sub 1
Rapid      X 0.0000 Y 6.2500
Arc Ccw    X -1.8685 Y 3.5368 Radius 2.0000
Arc Ccw    X -1.3919 Y -3.7500 Radius 4.0000
Arc Cw     X 1.3919 Y -3.7500 Radius 1.8000
Arc Ccw    X 1.8685 Y 3.5368 Radius 4.0000
Arc Ccw    X 0.0000 Y 6.2500 Radius 2.0000
EndSub
```

It is now time to check the program using the draw funtion.

Press **F2** **Draw**

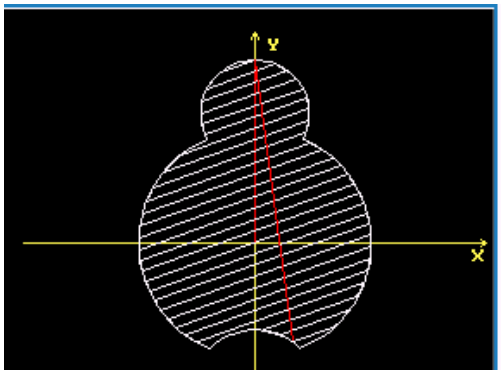
Press **F5** **Display** box will pop-up as shown below high light will be on fit.



Use arrow keys to move high light up and down.

Press **ENTER**



If all looks good in draw part is ready to cut.

Press **F10** **Exit**

Press **F10** **Exit**