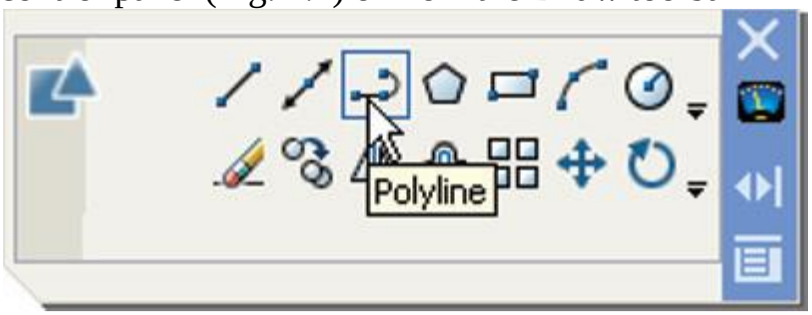
Ex. No. 4

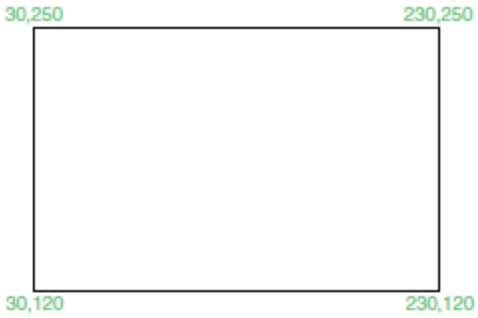
LEARNING OBJECTIVES

After completing this lesson, you will be able to know different ways for drawing lines by poly line, different ways for drawing arcs, different ways for drawing ellipse.

4.1Drawing with the Poly line tool

When drawing lines with the **Line** tool, each line drawn is an object in its own right. A rectangle drawn with the **Line** tool is four objects. A rectangle drawn with the **Poly line** tool is a single object. Lines of different thickness, arcs, arrows and circles can all be drawn using this tool as will be shown in the examples describing constructions using the **Poly line** tool. Constructions resulting from using the tool are known as **poly lines** or **plines**. The **Poly line** tool can be called from the **2D Draw** control panel (Fig. 4.1) or from the **Draw** toolbar





First example – Polyline tool (Fig. 4.2)

Note

In this example *enter* and *right-click* have not been included.
Left-click the **Polyline** tool (Fig. 4.1). The command line shows:
Command:_pline Specify start point: 30,250
Current line width is 0

Specify next point or [Arc/Halfwidth/Length/Undo/Width]: 230,250
Specify next point or [Arc/Close/Halfwidth/Length/Undo/Width]:230,120
Specify next point or [Arc/Close/Halfwidth/Length/Undo/Width]:30,120
Specify next point or [Arc/Close/Halfwidth/Length/Undo/Width]:c (Close)
Command:

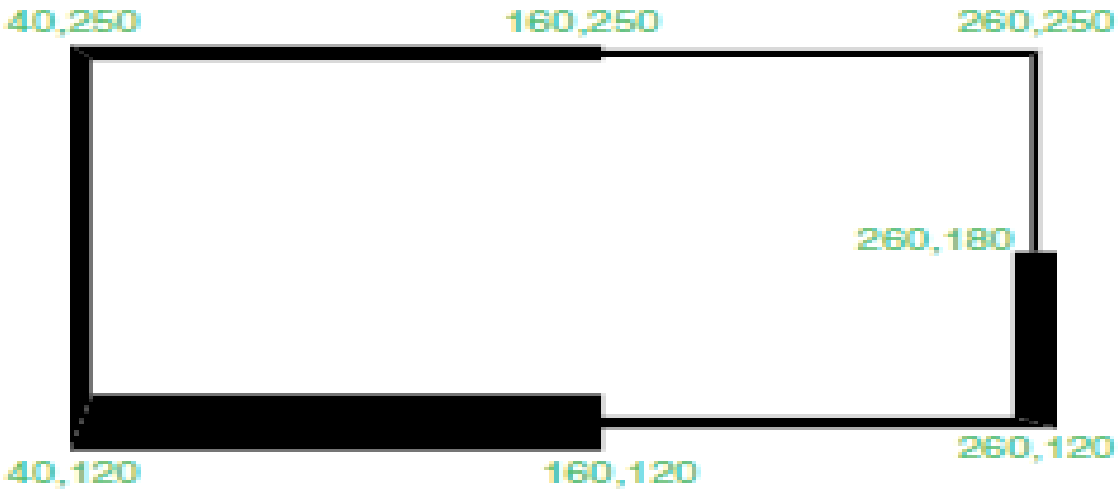
1. Note the prompts – **Arc** for constructing pline arcs; **Close** to close anoutline; **Halfwidth** to halve the width of a wide pline; **Length** to *enter* the required length of apline; **Undo** to undo the last pline constructed; **Close** to close an outline.
2. Only the capital letter(s) of a prompt needs to be *entered* in upper or lower case to make that prompt effective.
3. Other prompts will appear when the **Polyline** tool is in use as will beshown in later examples.

Second example – Polyline tool

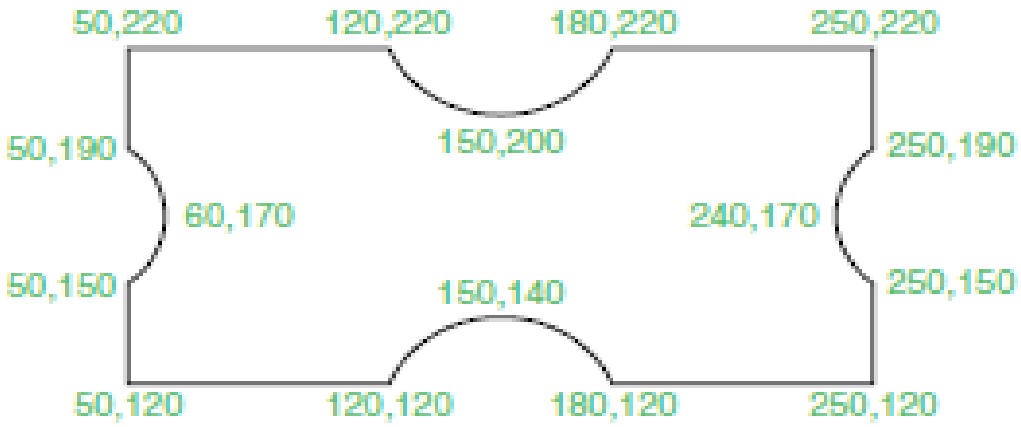
This will be a long sequence, but it is typical of a reasonably complex drawing using the **Polyline** tool. In the following sequences, when aprompt line is to be repeated, the prompts in square brackets ([ ]) will be replaced by **[prompts]**. *Left-click* the **Polyline** tool icon. The command line shows:

Command:_pline Specify start point: 40,250
Current line width is 0
Specify next point or [Arc/Halfwidth/Length/Undo/Width]: w (Width)
Specify starting width <0>: 5
Specify ending width <5_>: *right-click*
Specify next point or [Arc/Close/Halfwidth/Length/Undo/Width]:160,250
Specify next point or [prompts]: h (Halfwidth)
Specify starting half-width <2.5>: 1
Specify ending half-width _1_: *right-click*
Specify next point or [prompts]: 260,250
Specify next point or [prompts]: 260,180
Specify next point or [prompts]: w (Width)
Specify starting width _1_: 10
Specify ending width _10_: *right-click*
Specify next point or [prompts]: 260,120
Specify next point or [prompts]: h (Halfwidth)
Specify starting half-width _5_: 2
Specify ending half-width _2_: *right-click*
Specify next point or [prompts]: 160,120
Specify next point or [prompts]: w (Width)
Specify starting width _4_: 20
Specify ending width _20_: *right-click*
Specify next point or [prompts]: 40,120

Specify starting width _20_: 5
Specify ending width _5_: *right-click*
Specify next point or [prompts]: c (Close)
Command:



Fig(4.3)Second example – Polyline tool



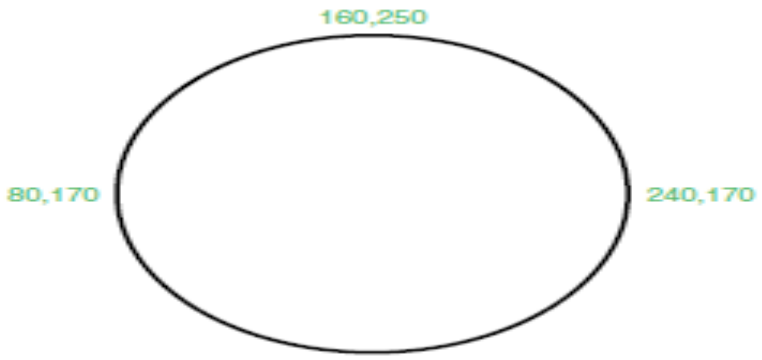
fig(4.4) Third example – Polyline

H.w complete Third example – Polyline fig(4.4)

Left-click the **Polyline** tool icon. The command line shows:
Command:_pline Specify start point: 50,220
Current line width is 0
[prompts]: w (Width)
Specify starting width _0_: 0.5
Specify ending width _0.5_: *right-click*
Specify next point or [prompts]: 120,220
Specify next point or [prompts]: a (Arc)
Specify endpoint of arc or [prompts]: s (second pt)
Specify second point on arc: 150,200
Specify end point of arc: 180,220
Specify end point of arc or [prompts]: l (Line)
Specify next point or [prompts]: 250,220
Specify next point or [prompts]: 250,190
Specify next point or [prompts]: a (Arc)
Specify endpoint of arc or [prompts]: s (second pt)
Specify second point on arc: 240,170
Specify end point of arc: 250,150
Specify end point of arc or [prompts]: l (Line)
Specify next point or [prompts]: 250,150
Specify next point or [prompts]: 250,120
And so on until the outline in Figure(4.4) is completed.

Fourth example – Polyline tool fig (4.5)

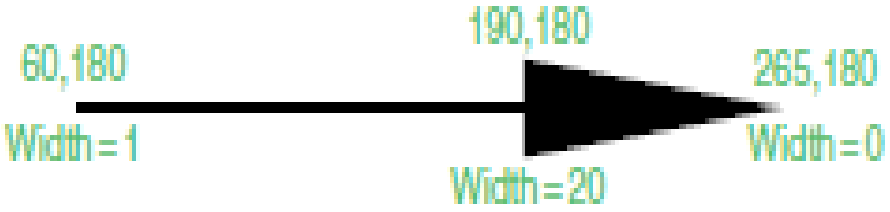
Left-click the **Polyline** tool icon. The command line shows:
Command:_pline Specify start point: 80,170
Current line width is 0
Specify next point or [prompts]: w (Width)
Specify starting width _0_: 1
Specify ending width _1_: *right-click*
Specify next point or [prompts]: a (Arc)
Specify endpoint of arc or [prompts]: s (second pt)
Specify second point on arc: 160,250
Specify end point of arc: 240,170
Specify end point of arc or [prompts]: cl (CLose)
Command:
And the circle in Fig. (4.5) is formed



Fig(4.5) ***Fourth example – Polyline tool***

Fifth example – Polyline tool(4.6)

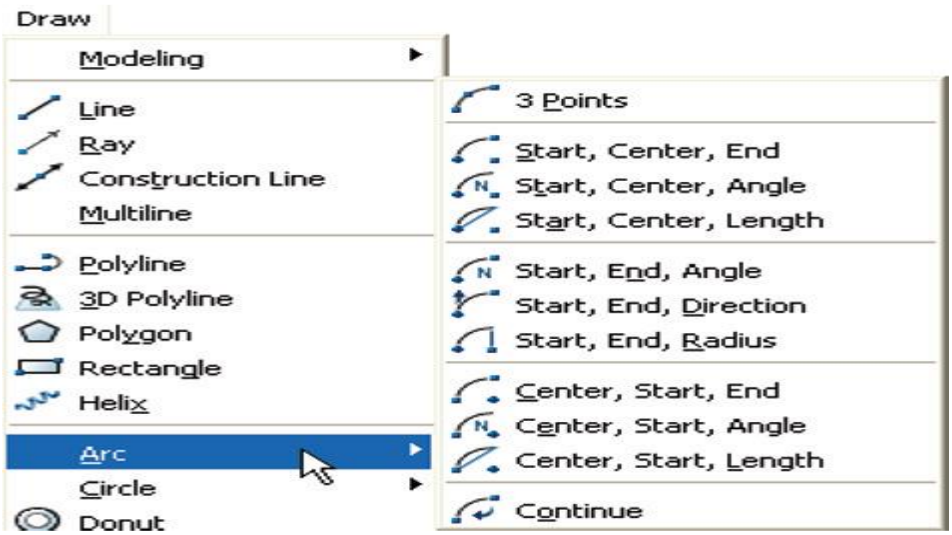
Left-click the **Polyline** tool icon. The command line shows:
Command:_pline Specify start point: 60,180
Current line width is 0
Specify next point or [prompts]: w (Width
Specify starting width _0_: 1
Specify ending width _1_: *right-click*
Specify next point or [prompts]: 190,180
Specify next point or [prompts]: w (Width)
Specify starting width _1_: 20
Specify ending width _20_: 0
Specify next point or [prompts]: 265,180
Specify next point or [prompts]: *right-click*
Command:
And the arrow in Fig.(4.6) is formed.



Fig(4.6) ***Fifth example – Polyline tool***

4.2The Arc tool

In AutoCAD 2008, arcs can be constructed using any three of the following characteristics of an arc: its **Start** point; a point on the arc (**Second**point); its **Center**; its **End**; its **Radius; Length** of the arc; **Direction** in which the arc is to be constructed? **Angle** between lines of the arc. In the examples which follow, *entering* initials for these characteristics in response to prompts at the command line when the **Arc** tool is called allows arcs to be constructed in a variety of ways.
To call the **Arc** tool *click* on its tool icon in the **2D Draw** control panel (Fig. 4.8), or *click* on **Arc** in the **Draw** drop-down menu. A sub-menu



shows the possible methods of constructing arcs (Fig. 4.9). The abbreviation for calling the **Arc** tool is **a**.

First example – Arc tool

Left-click the **Arc** tool icon. The command line shows:
Command:_arc Specify start point of arc or [Center]: 100,220
Specify second point of arc or [Center/End]: 55,250
Specify end point of arc: 10,220
Command:

Second example – Arc tool

Command: *right-click* brings back the **Arc** sequence
ARC Specify start point of arc or [Center]: c (Center)
Specify center point of arc: 200,190
Specify start point of arc: 260,215
Specify end point of arc or [Angle/chord Length]: 140,215
Command:

Third example – Arc tool

Command: *right-click* brings back the **Arc** sequence
ARC Specify start point of arc or [Center]: 420,210
Specify second point of arc or [Center/End]: e (End)
Specify end point of arc: 320,210
Specify center point of arc or [Angle/Direction/Radius]: r (Radius)
Specify radius of arc: 75
Command:

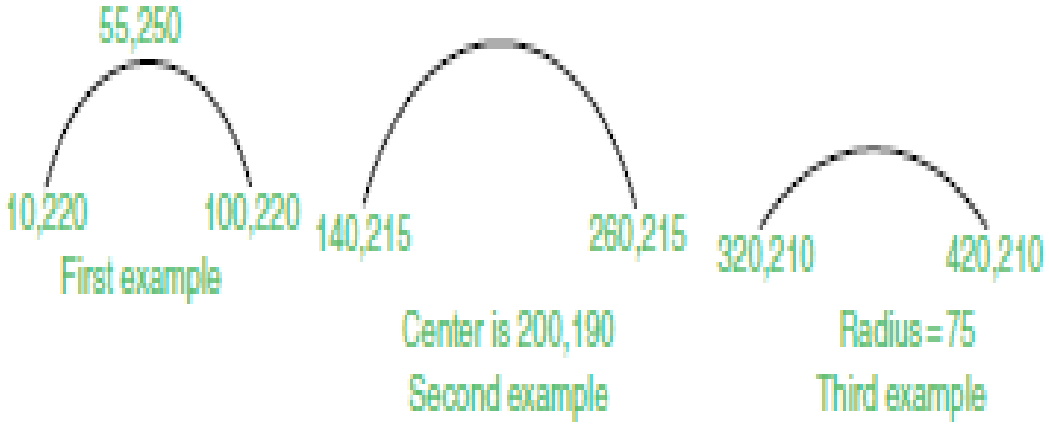
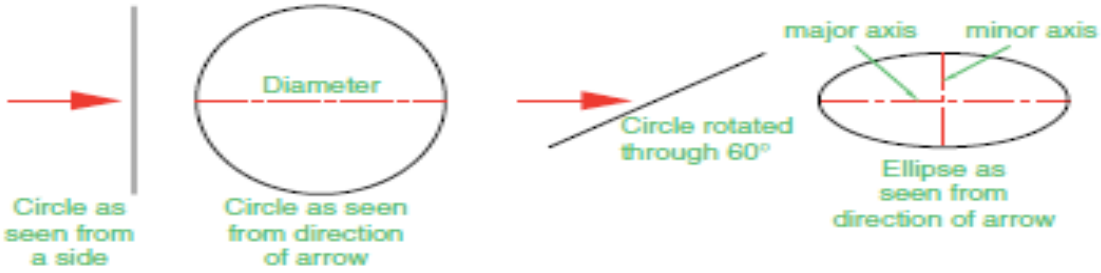


Fig (4.10)examples for arc

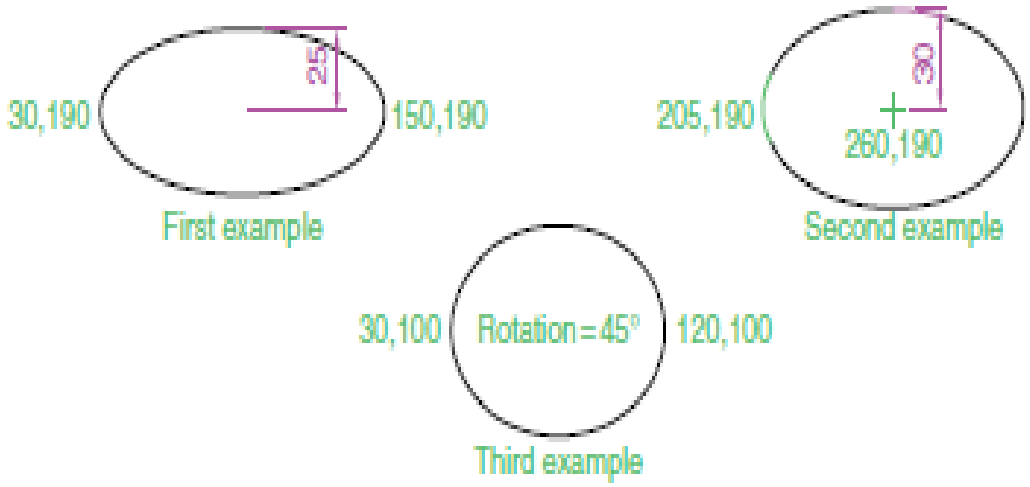
The Ellipse tool

Ellipses can be regarded as what is seen when a circle is viewed from directly in front of the circle and the circle rotated through an angle about its horizontal diameter. Ellipses are measured in terms of two axes – a **major axis** and a **minor axis**, the major axis being the diameter of the circle, the minor axis being the height of the ellipse after the circle has been rotated through an angle (Fig. 4.11).



To call the **Ellipse** tool, *click on* its tool icon in the **2D Draw** control panel or *click* on its name in the **Draw** drop-down menu. The abbreviation for calling the **Ellipse** tool is **el**.

Draw Next Figures



First example – Ellipse

Left-click the **Ellipse** tool icon. The command line shows:
Command:_ellipse
Specify axis endpoint of elliptical arc or [Center]: 30,190
Specify other endpoint of axis: 150,190
Specify distance to other axis or [Rotation]: 25
Command:

Second example – Ellipse

In this second example, the coordinates of the centre of the ellipse (the point where the two axes intersect) are *entered*, followed by *entering* coordinates for the end of the major axis, followed by *entering* the units for the end of the minor axis.

Command: ELLIPSE
Specify axis endpoint of elliptical arc or [Center]: c
Specify center of ellipse: 260,190
Specify endpoint of axis: 205,190
Specify distance to other axis or [Rotation]: 30
Command:

Third example – Ellipse

In this third example, after setting the positions of the ends of the major axis, the angle of rotation of the circle from which an ellipse can be obtained is *entered*.

Command: ELLIPSE
Specify axis endpoint of elliptical arc or [Center]: 30,100
Specify other endpoint of axis: 120,100
Specify distance to other axis or [Rotation]: r (Rotation)
Specify rotation around major axis: 45
Command: