

AutoCAD 2009: One Step at a Time

Lesson 13: Guidelines and Splines

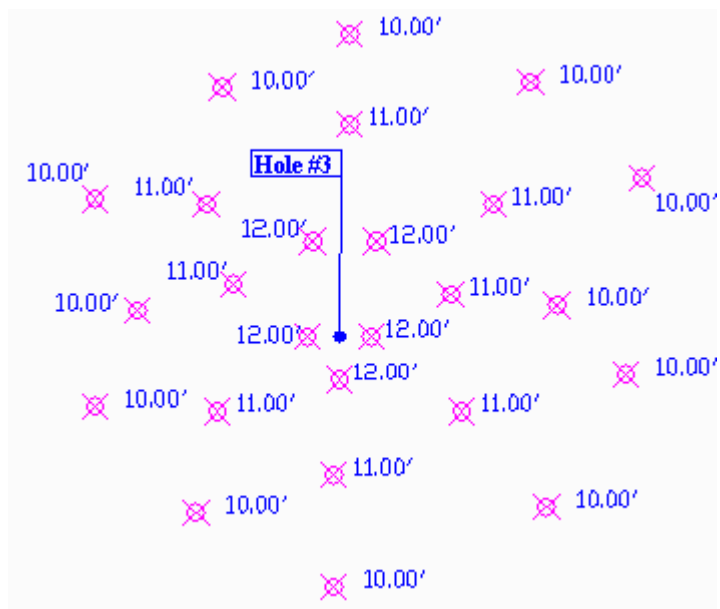
09R13

Exercises

1. Open *topography* (right) from the C:\Steps\Lesson13 folder.

We shot several elevations during a survey of an area golf course. The elevations for Hole # 3 are shown.

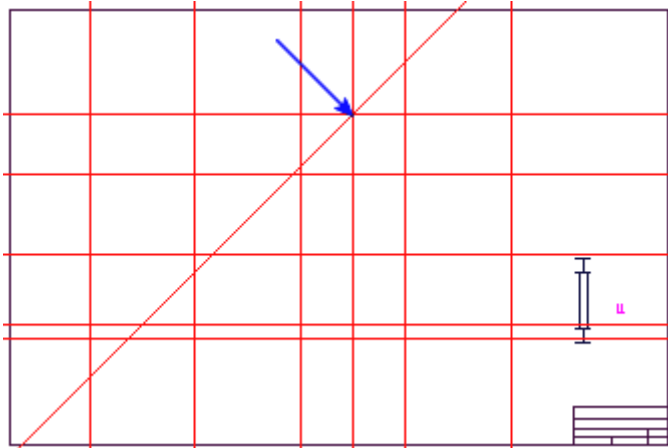
Using the *SPLine* command, draw contour lines connecting like elevations. This will afford you a topographical view of the area.



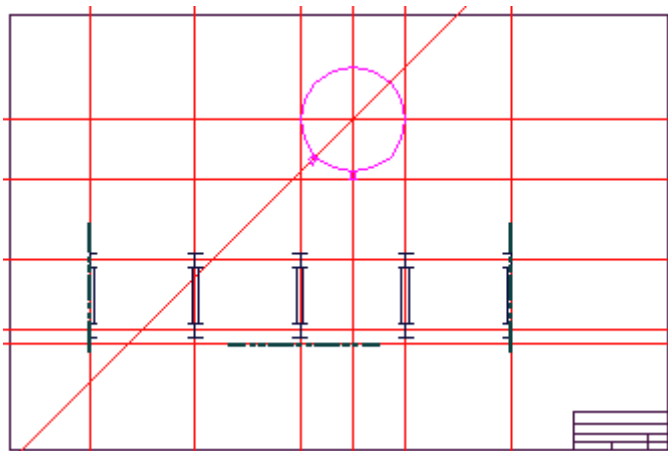
2. Open *Piping plan 13* in the C:\Steps\Lesson13 folder.
 - 2.1. On the **Const** layer, create horizontal construction lines at these coordinates:
0,18'; 0,28'; 0,48'; 0,39'6; 0,16'
 - 2.2. Create vertical constructions at these coordinates:
12'6,0; 27'6,0; 42'6,0; 57'6,0;
50',0; 72'6,0
 - 2.3. Create a 45° angled construction line at 50',48'.



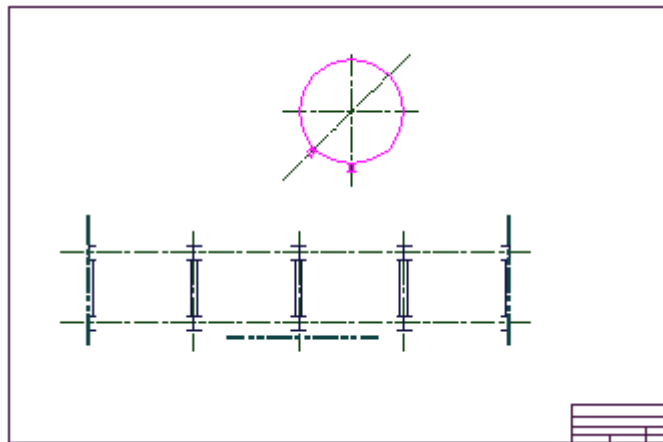
Your drawing looks like this
(without the arrow):



- 2.4. On the **EQUIP** layer, draw a 15' diameter circle at the intersection indicated by the arrow in the previous figure.
- 2.5. Using modification commands, position the ibeams, pipe supports and nozzle as indicated here.

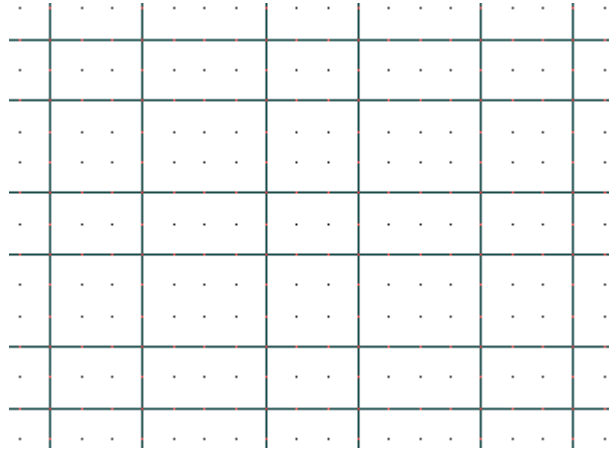


- 2.6. Add the matchlines as shown (use 3" wide polylines on the **MATCHLIN** layer). Trim and change the layer of the construction lines to **CENTER**. Your drawing will look like this.
- 2.7. Save the drawing as *MyPipingPlan13* in the C:\Steps\Lesson13 folder.

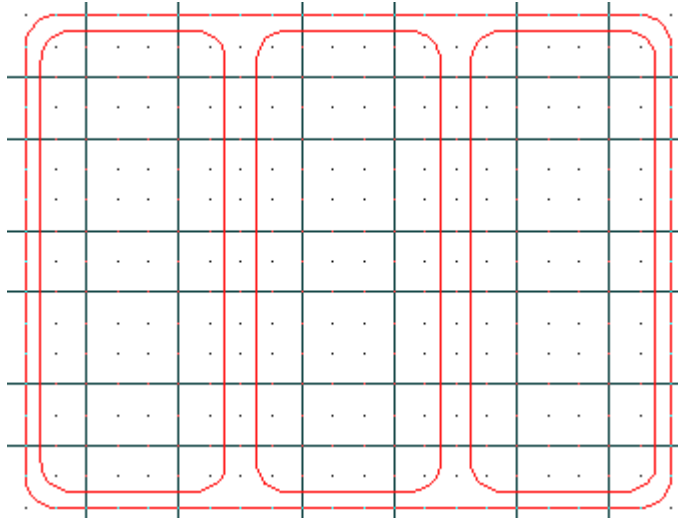


3. Start a new drawing from scratch. Save it as *MyContPanel* in the C:\Steps\Lesson13 folder.
 - 3.1. Accept the default limits, but set the grid to $\frac{1}{2}$ and the snap to $\frac{1}{4}$. Create layers as needed during the drawing session, but begin with the basic. **Const**, **object**, **text**, **centerline**, and **hidden** layers with appropriate colors and linetypes are a good start.

- 3.2. Using the grid as a guide, draw construction lines on the **CONST** layer, as shown here.

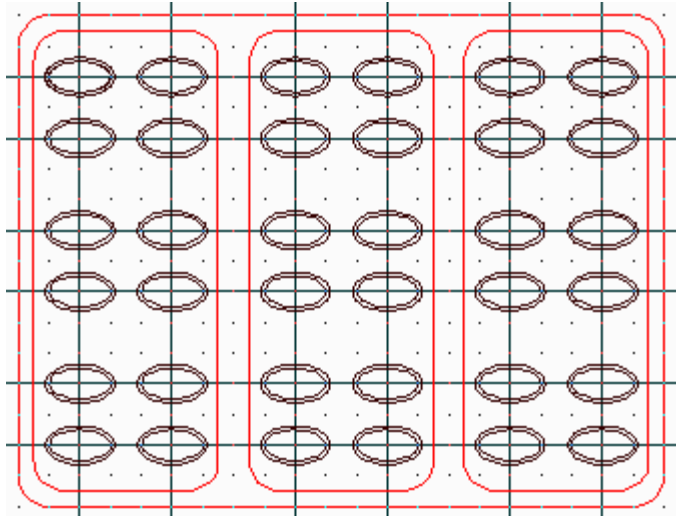


- 3.3. On the **OBJECT** layer, draw rectangles as shown.



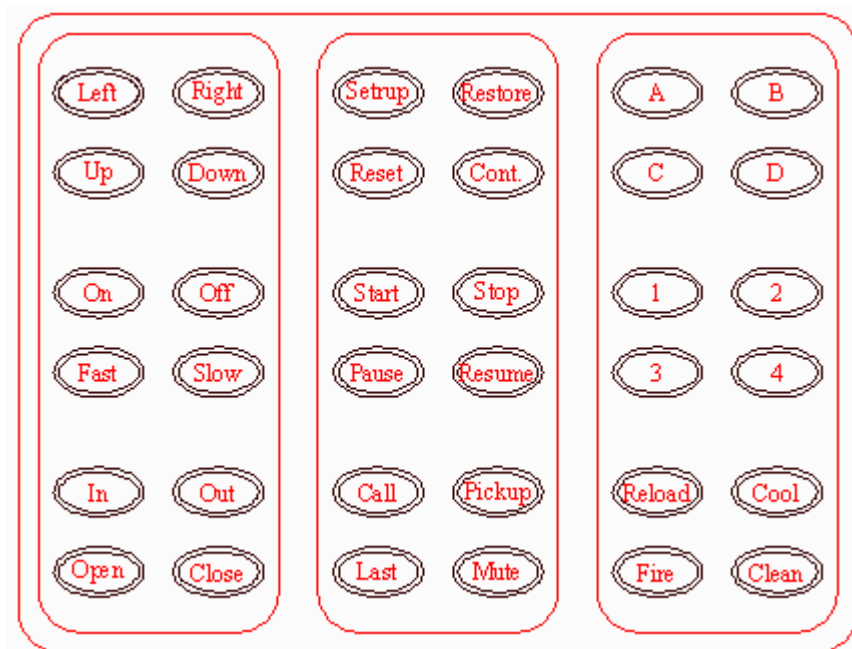
Rectangles with $\frac{1}{2}$ " Fillets

3.4. Now draw the buttons. Use the grid to guide you as you draw the inner ellipses. Offset those 1/16" outward for the outer ellipses. Put the buttons on their own layer.



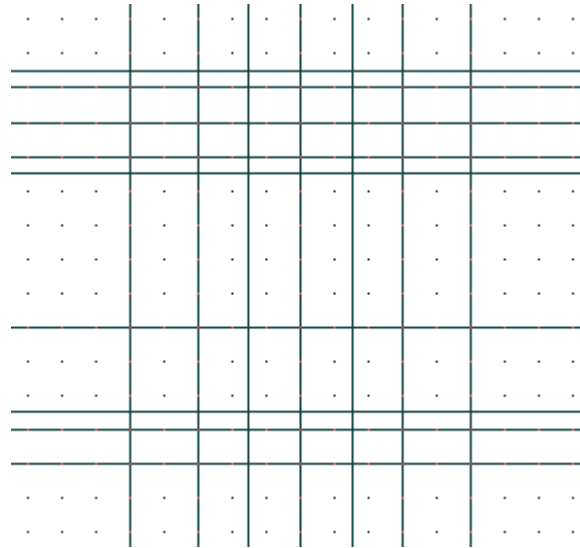
Buttons

3.5 Now complete the drawing as shown in the following figure.



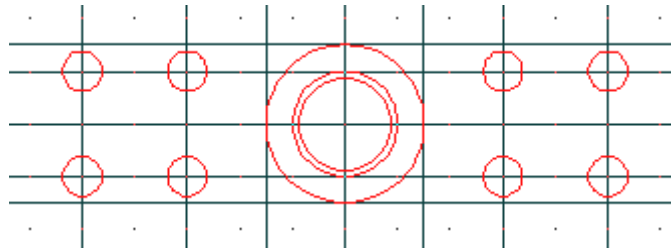
- Start a new drawing from scratch as you did in Exercise 3. Save the drawing as *MyHolder2* in the C:\Steps\Lesson13 folder.

On the **CONST** layer, create the construction lines shown at right.

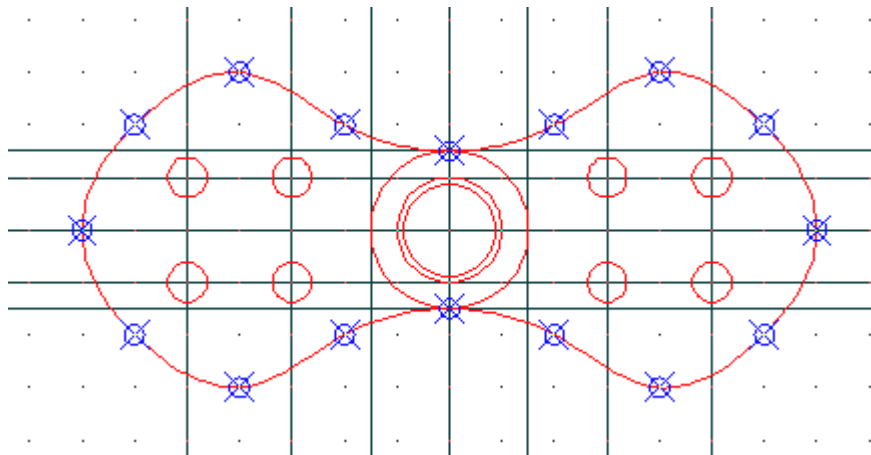


On the **OBJECT** layer, create the circles shown in the the following figure. (The smaller circles are 3/8" dia. And the inner circle is offset 1/16 from one next to it.)

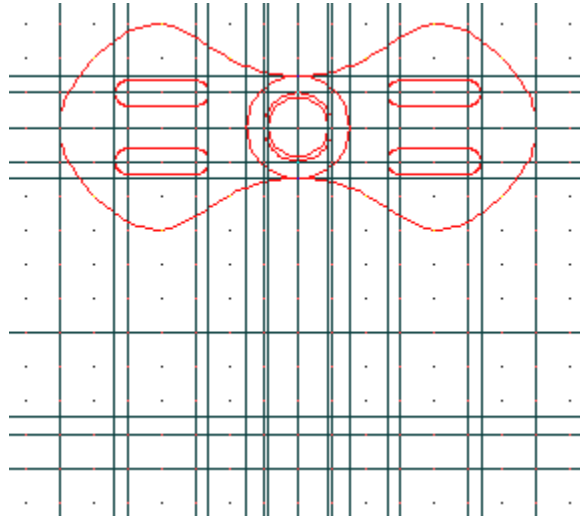
Construction Lines



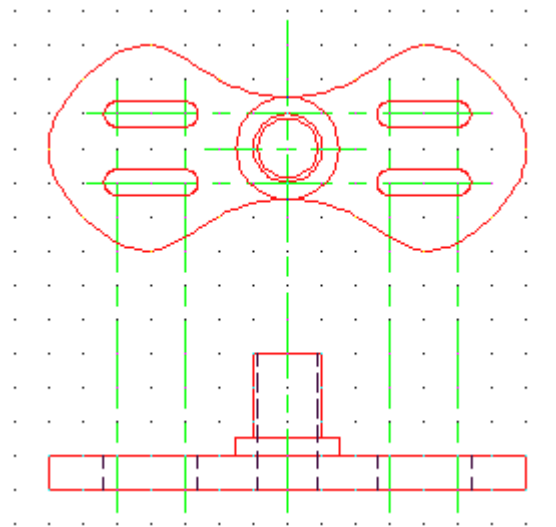
Snapping to the points indicated below, draw a spline as shown.



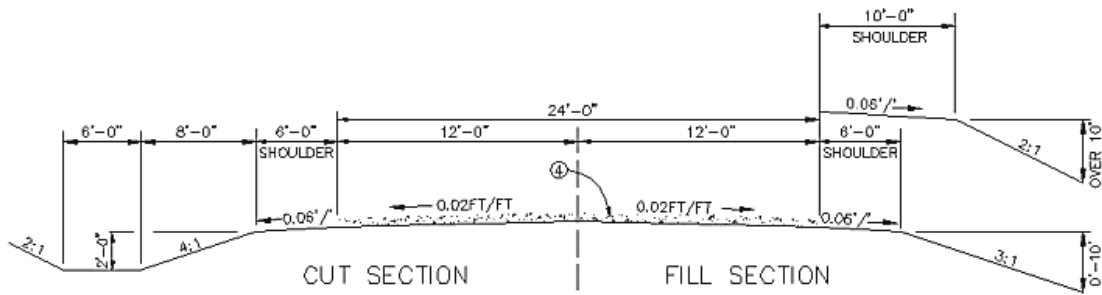
Draw the notches and add construction lines as indicated below.



Complete the drawing (see the following figure).

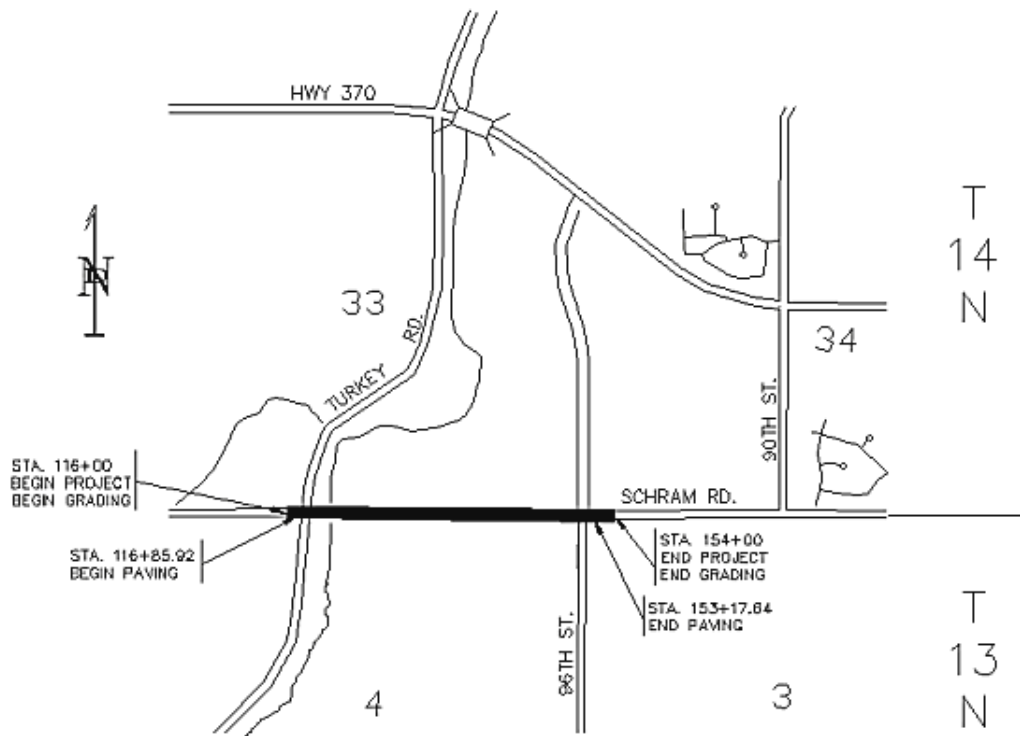


5. Using what you've learned, create the remaining drawings. Don't draw the hatching.
 [Special thanks to Randy Behounek At Sarpy County Surveyors Office in Papillion, Nebraska for permission to use these drawings.]



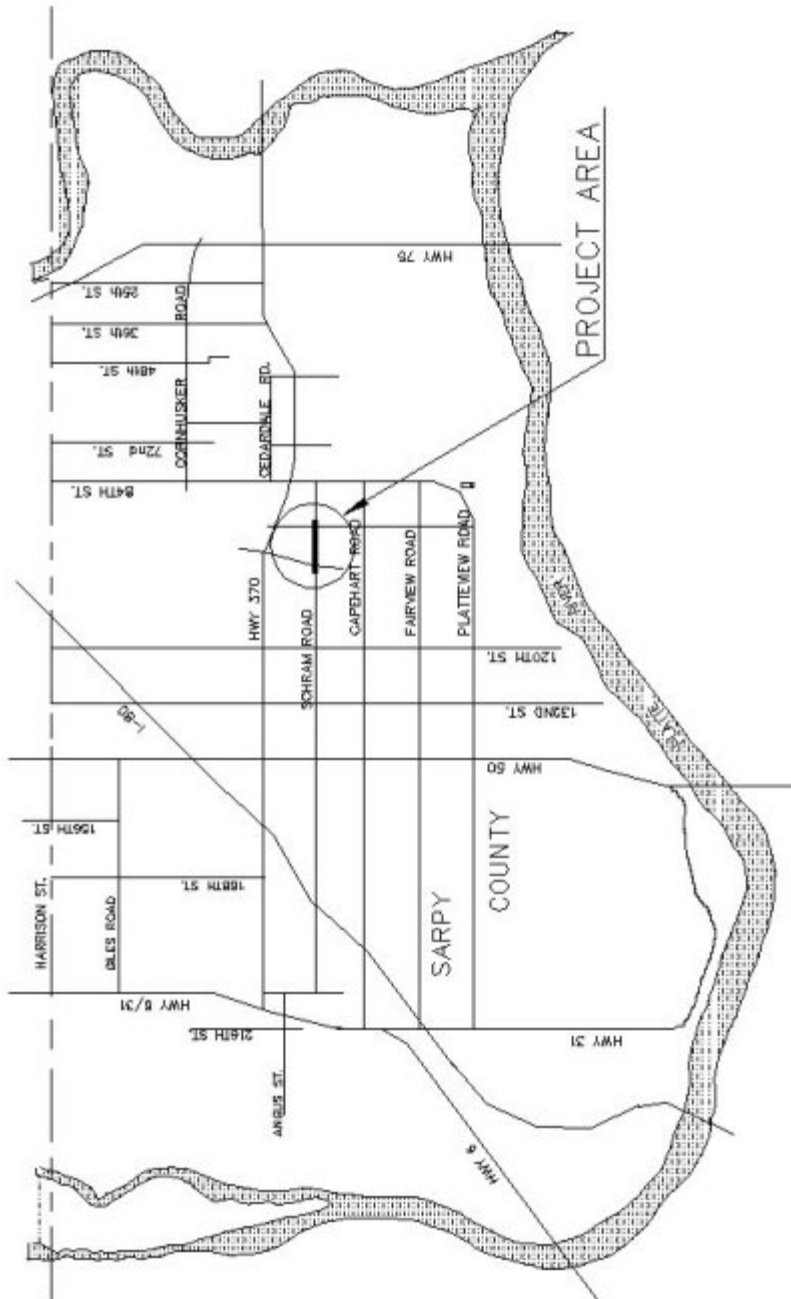
TYPICAL CROSS SECTION

SCHRAM RD. STA. 100+00 TO STA. 116+88.98
 SCHRAM RD. STA. 153+17.24 TO STA. 158+00



R 12 E

PROPOSED PROJECT LENGTH:



Write your answers on a separate sheet of paper.

1. Which takes up less drawing memory, a spline or a splined polyline?
2. Use the Object option of the _____ command to convert a splined polyline into a spline.
3. The _____ option tells AutoCAD to draw the spline within a certain distance of the points selected by the user.
4. Normally, the points used to define a contour line (spline) will be provided by a _____.
5. The _____ on a spline are essentially the same thing as vertices on a polyline.
6. Which option must I select on the first tier of SplinEdit options to find the tier with the purge option?
7. If the user wants to add a control point to a spline, he must first select which option of the SplinEdit command?
8. A control point's _____ determines how much influence that point has against the spline.
9. A mathematical spline often used in 3-dimensional drawing is called a _____.

Use either the (10) or the (11) command to create a construction line in AutoCAD.

- 10.
- 11.
12. Of the two previous commands, which is infinite in *both* directions?
13. (T or F) Because a construction line is infinite in both directions, use of construction lines disables the zoom extents command.
14. Use the (xline, ray) command to bisect an existing angle.
15. (T or F) Guidelines or construction lines are created by the XLine or Ray command.
16. (T or F) Producing an infinite line in both directions, the XLine command is the same as the Ray command.
17. (T or F) Neither an XLine nor a Ray can be trimmed after insertion.
18. (T or F) Although XLines and Rays are considered background by AutoCAD and do not affect zooms, they will still print.

Answers

- | | |
|------------------|-----------|
| 1. Spline | 10. XLine |
| 2. Spline | 11. Ray |
| 3. Fit Tolerance | 12. XLine |
| 4. Surveyor | 13. F |
| 5. Fit points | 14. XLine |
| 6. Fit data | 15. T |
| 7. Refine | 16. F |
| 8. Weight | 17. F |
| 9. NURBS | 18. T |