## STUDY SET 04 3-D SOLID MODELING

## PROBLEMS FOR LABORATORY WORK

### 4.1 Circular Sweep

Sketch the resulting solid model if the given profiles were to be circularly swept 360 degrees about the $Y$ axis.


### 4.2 Linear Sweep

Sketch the resulting solid model if the given profiles were to be linearly swept 2 units along the $+Z$ axis.

4.3 Boolean Operations

Given the three overlapping solid primitives, make an isometric sketch of the resulting solid after applying the following Boolean operations: A-B-C.


### 4.4 Problem 4.6 (Figure 4.51)

Create the objects using solid modeling techniques. Use grid snap.

(A)

(D)

(B)

(E)

(C)

(F)

### 4.5 Solid Exercise 1

Create the objects given below using the top view dimensions.


### 4.6 Solid Exercise 3

Create the objects given below using the top view dimensions.


## Semi-ellipse based

 on $180 \times 100$ axes

### 4.7 Solid Exercise 4

Create the objects given below using the top view dimensions and the directrix.


### 4.8 Solid Exercise 5

Create the objects given below using loft tool.


### 4.9 Solid Exercise 6

Working to the dimensions given, construct an extrusion of the plate to a height of 40 units.


### 4.10 Solid Exercise 7

Working to the polylines given, construct the Sweep shown below.


### 4.11 Solid Exercise 9

Construct the solid model shown below.


### 4.12 Solid Exercise 10

Construct the solid model shown below.


### 4.13 Solid Exercise 11

Construct the solid model shown below.


### 4.14 Solid Exercise 12

Construct the solid model shown below.


### 4.15 Solid Exercise 13

## Construct the solid model shown below.



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## SELECTEDPROBLEMS

### 4.1 Linear/Circular Sweep

Create wireframe or solid by sweeping the profiles using a scale of 1:1.
a. Sweep linearly 5 units along the $+Z$ axis.
b. Sweep linearly along the vector $(2,-3,5)$.
c. Sweep $360^{\circ}$ about the $Y$ axis.
d. Sweep $360^{\circ}$ about the X axis.
e. Sweep $90^{\circ}$ about the $+X$ axis.
f. Sweep $270^{\circ}$ about the $-Y$ axis.
g. Sweep $360^{\circ}$ about the $Y$ axis offset 2 units in $-X$ direction.

(A)

(D)

(B)

(C)

A

D

B

C

E

A

B

C
(A)

D

E


### 4.2 Problem 4.3

Match the 12 objects swept using diffrents 12 profiles.


### 4.3 Problem 4.7

Create the objects using wireframe or solid modeling techniques in a 1:1 scale.


