

First Name _____ Last Name _____

Lab 6

Identify the surface by name.

1) $x = \frac{y^2}{25} + \frac{z^2}{10}$

- A) Elliptic paraboloid
C) Ellipsoid

- B) Hyperbolic cylinder
D) Hyperbolic paraboloid

2) $\frac{y^2}{9} + \frac{z^2}{4} - x^2 = 0$

- A) Ellipsoid
C) Hyperbolic cylinder

- B) Hyperboloid of one sheet
D) Elliptic cone

3) $\frac{z^2}{7} - \frac{x^2}{2} = \frac{y}{6}$

- A) Hyperbolic paraboloid
C) Paraboloid

- B) Parabolic cylinder
D) Ellipsoid

Identify the quadric surface by name. Find and describe the xy-, xz-, and yz-traces, when they exist.

4) $16x^2 - 16y^2 - z = 0$

- A) Elliptic paraboloid; xz-trace: $16x^2 - z = 0$ (parabola); yz-trace: $16y^2 + z = 0$ (parabola)
B) Elliptic cone; xz-trace: $16x^2 - z = 0$ (hyperbola); yz-trace: $16y^2 + z = 0$ (hyperbola)
C) Elliptic paraboloid; xz-trace: $16x^2 - z = 0$ (hyperbola); yz-trace: $16y^2 + z = 0$ (hyperbola)
D) Hyperbolic paraboloid; xz-trace: $16x^2 - z = 0$ (parabola); yz-trace: $16y^2 + z = 0$ (parabola)

5) $-9x^2 - 9y^2 + z^2 = 9$

- A) Ellipsoid; xy-trace: $-9x^2 - 9y^2 = 9$ (circle); xz-trace: $z^2 - 9x^2 = 9$ (ellipse); yz-trace: $z^2 - 9y^2 = 9$ (ellipse)
B) Hyperboloid of two sheets; xz-trace: $z^2 - 9x^2 = 9$ (hyperbola); yz-trace: $z^2 - 9y^2 = 9$ (hyperbola)
C) Hyperboloid of one sheet; xy-trace: $-9x^2 - 9y^2 = 9$ (circle); xz-trace: $z^2 - 9x^2 = 9$ (hyperbola); yz-trace: $z^2 - 9y^2 = 9$ (hyperbola)
D) Hyperboloid of two sheets; xy-trace: $-9x^2 - 9y^2 = 9$ (circle); xz-trace: $z^2 - 9x^2 = 9$ (hyperbola); yz-trace: $z^2 - 9y^2 = 9$ (hyperbola)

Match the equation with the surface it defines.

6) $\frac{x^2}{9} + \frac{y^2}{36} + \frac{z^2}{9} = 1$

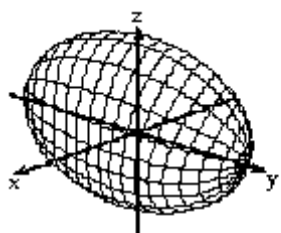


Figure 1

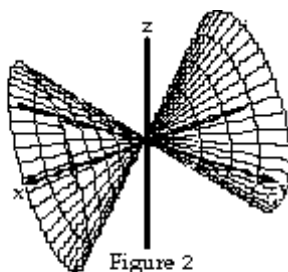


Figure 2

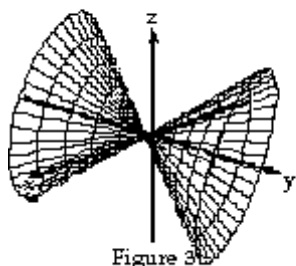


Figure 3

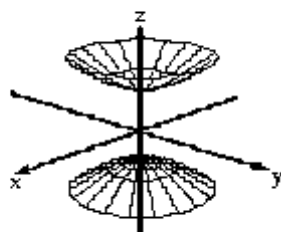


Figure 4

A) Figure 1

B) Figure 2

C) Figure 3

D) Figure 4

7) $\frac{y^2}{64} + \frac{z^2}{16} = 1$

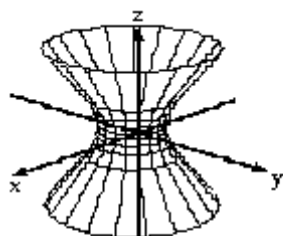


Figure 1

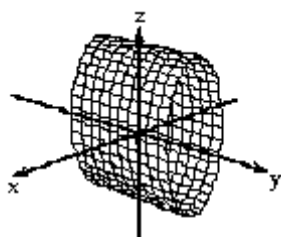


Figure 2

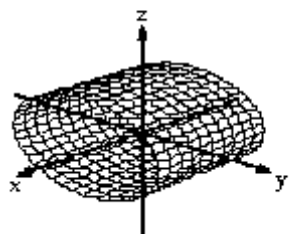


Figure 3

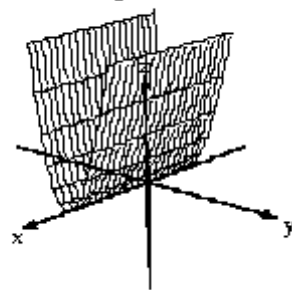


Figure 4

A) Figure 1

B) Figure 2

C) Figure 3

D) Figure 4

Answer Key

Testname: LAB 6 - 13.6

- 1) A
- 2) D
- 3) A
- 4) D
- 5) B
- 6) A
- 7) C