13.1 HW Solutions

8. 

 so ABC is a right triangle, but not isosceles

10. (a) 5 (b) 3 (c) 7

(d)  (e)  (f) 

15. 

Center at (-1, -4, 2), radius = 7

20. center is at midpoint (3, 2, 7), radius is half the distance or 



38.  OR 

13.2 HW Solutions

5. (a)  (c) 

11. 

19. 21.

 

25. 

27. 

40.



13.6 HW Solutions

4. Parabolic cylinder with rulings parallel to the *y*-axis.

10. *xy*-plane: (parabolas), *xz-*plane:  (the origin, but for *y*=k you would have circles), *yz*-plane  (parabolas). This is a circular paraboloid.

12. *xy*-plane: (the lines , but for *z*=k you have hyperbolas), *xz-*plane:  (parabolas), *yz*-plane  (parabolas). This is a hyperbolic paraboloid.

30. . This is a hyperboloid of two sheets with axis the *y*-axis.

32. . This is an ellipsoid with center at (1, 0, 0).

36. . This is an elliptic cone with vertex (0, 1, 1) and axis parallel to the *z*-axis.

41.

42.

43. The traces in both the *xy* and *yz* planes will be parabolas. Cross sections parallel to the *xz* plane will be circles. So the equation is 

48. Any point on the curve of intersection must satisfy 6*x* + 5*y* = 2 as shown below. This is the equation of a plane, so the curve of intersection must lie in this plane.



13. 7 HW Solutions  
3. (0, 3, 1) 

11.   with in the third quadrant

15.  , , 

21.  

25.   so 

29.  

31. is a circular cylinder with radius 3 and axis the *z*-axis.

32. is a sphere with center at the origin and radius of 3.

35. The surface is the top half of a right circular cone with vertex at the origin and axis the positive *z*-axis.

36. The half plane including the *z*-axis and intersecting the *xy* plane in the line .

37.  This is a circular paraboloid with vertex at the origin and axis the positive *z*-axis.

38. In rectangular coordinates,  is a circular cylinder with radius 2 and axis parallel to the *z*-axis.

42. In rectangular coordinates,  is a sphere of radius 1 with center at (0, 0, 1)

43. In rectangular coordinates,  is a sphere with center at the origin and radius of 5.

55. a.  b. 

60. cone