Lesson 6.1.4

6-44. (2, 4)

6-45. While the planes intersect at ($\frac{1}{2}$, $-\frac{1}{3}$, 2), students will not be able to find the point by graphing. This problem motivates students to find a new strategy for solving a system of three equations with three variables.

6-46. See "Suggested Lesson Activity" for possible responses.

6-47. See below:

a. She added the two equations.

b. One way is to add the first and third equations to get $4x + 5z = 12$, $x = \frac{1}{2}$ and $z = 2$.

c. $y = -\frac{1}{3}$, $(\frac{1}{2}, -\frac{1}{3}, 2)$

d. Answers vary.

6-48. See below:

a. $(-2, 4, \frac{1}{3})$

b. There is no solution because two of the planes are parallel

c. $(-1, \frac{1}{2}, 2)$

d. The intersection is the line $6x + 4y = 12$ when z is 0.

6-49. See below:

a. Two of the planes are parallel, so there cannot be a common solution point.

b. The planes can be parallel, and each pair of planes can intersect in a line such that all three lines are parallel.

c. Because they intersect at a line, there are infinite solutions (but all are collinear).

6-51. (1, –2, 4)

6-52. See below:

a. ≈ $140,809.30

b. ≈ 24.2 years

c. ≈ $164,706.25

6-53. $x = 7$

6-54. See below:

a. They both equal 16, but this is a special case (for example, $5^3 \neq 3^5$).

b. Yes, because log16 = log16.

c. Yes. (Possible response: They have the same solutions).

d. Yes. (Possible response: They have the same solutions).

6-55. See below:

a. $x = 6.5$

b. $x = -3.75$ or $x = 5$

6-56. See below:

a. $y = \frac{1}{3}x + 5$

b. $y = 2x + 5$

c. $y = -\frac{1}{2}x + \frac{15}{2}$

d. $y = 2x$

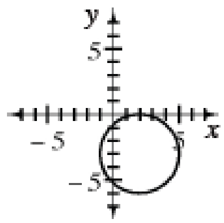
6-57. See below:

a. $y = -x^2 + 4x$

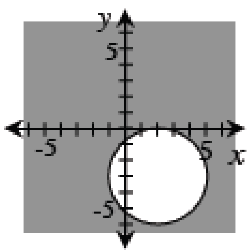
b. $y = 5 \pm \sqrt{x-3}$

6-58. See below:

a. See graph below.



b. See graph below.



6-59. 384 feet