Lesson 5.1.3

5-40. See below:

a. $y = 6x - 11$

b. Same table as given, but with columns switched.

c. The x and y values are reversed.

d. switch x and y to get $x = 6y - 11$

e. $y = \frac{x+11}{6}$ $y = \frac{x+11}{6}$

f. justifications vary

5-41. See below:

a. $y = \sqrt[3]{\frac{x}{2}} + 1$

b. $y = (x - 3)^2 + 2$ with the restricted domain $x \geq 3$

c. $y = 2(\frac{x-20}{3}) + 9$

d. $y = \sqrt[3]{\frac{3(x-6)}{4}} + 1$

5-42. See below:

a. She should reverse the order of the machines and check in that direction as well.

b. Answers vary based on equations selected.

c. Yes, reasons vary.

d. No. $g(3)$ cannot be the input for $f(x)$ unless she reverses the order.

e. It will work for any input.

5-43. See below:

a. Answers vary. Sample: expect to get out the original input value.

b. Answers vary. Sample: expect to get out the original input value.

c. Answers vary. Sample: expect to get out the original input value.

d. Yes.

5-44. Trejo is correct; justifications vary.

5-45. See below:

a. yes, for any x: $f(g(x)) = x$, $g(f(x)) = x$

b. yes, for any x: $f(g(x)) = x$, $g(f(x)) = x$

c. no, $e(d(x)) = 4x$ and $d(e(x)) = 2x - 10$. $e^{-1}(x) = 2\sqrt{x} + 10$ and $d^{-1}(x) = (\frac{x-10}{4})^2$.

5-46. Rebecca is correct. All the x and y parts are interchanged. The inverse of the graph below has an asymptote at the x-axis, domain of $x > 0$, and range of all real numbers.

5-48. See below:

a. 121

b. 17

5-49. See below:

a. $2x^3 + 2x^2 - 3x - 3$

b. $x^3 - x^2 + x + 3$

c. $2x^2 + 12x + 18$

d. $4x^3 - 8x^2 - 3x + 9$

5-50. See below:

a. $x = -\frac{10}{7}$

b. $x = \frac{1}{3}$ or $x = 1$

c. $x = 115$

d. $x = 0$ or $x = 4$

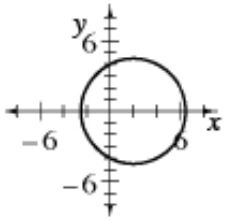
5-51. See below:

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

b. $y = 4\left(\sqrt[3]{x} - 6\right)$

c. $y = \frac{x^2+6}{5}$

5-52. $(x-2)^2 + y^2 = 20$; circle, $x^2 + y^2 = r^2$, center (2, 0) and radius ≈ 4.5; See graph below.



5-53. 70

5-54. See below:

a. 3

b. $y - 4$

c. $\frac{1}{3x}$

d. $\frac{x}{x-2}$