Math 141 - Week in Review #1 Answer Key

1. (a) $y = -\dfrac{4}{3}x + \dfrac{7}{3}$
   (b) $y = 5$
   (c) $x = -2$

2. (a) $z = -\dfrac{107}{7}$
   (b) $z = 6$

3. (a) $y = \dfrac{18}{5}x - \dfrac{1014}{5}$ (or $y = 3.6x - 202.8$)
   (b) There will be 25 fewer visitors to the pool.
   (c) The temperature is about 4.1667^o higher than on the day before.
   (d) 56.3333^o
   (e) No. We saw in part (d) that no one will come for $x = 56.3333$, and if you plug in a number smaller than 56.3333 for x, the equation will give a negative y-value. Since we can't have a negative number of visitors to the pool, we cannot plug in x-values less than 56.3333. Also, water boils at 212^oF, so for $x \geq 212$, there would be no water in the pool.

4. (a) The car depreciates in value at a rate of \$4,500 per year.
   (b) $y = -4500t + 35000$
   (c) in about 5.5556 years
   (d) $0 \leq t \leq \dfrac{70}{9}$ ($t = 0$ is when we initially purchased the car, and $t = \dfrac{70}{7}$ is when the car's value has depreciated to \$0.)

5. Algebraically, the break-even point is about $(105.4545, 7909.09)$. Talk to your instructor about rounding.

6. (a) $C(x) = 50x + 5250$, $R(x) = 80x$, $P(x) = 30x - 5250$
   (b) loss of \$750
   (c) the change in total cost associated with producing one additional unit

7. (a) $p = -\dfrac{1}{75}x + 15$
   (b) 1125 people
   (c) equilibrium quantity = 510 tickets, equilibrium price = \$8.20

8. 9252 cameras

9. (a) $y = 0.3146x - 4.4110$
   (b) Yes. The correlation coefficient is $r = 0.9734$ which is very close to 1, indicating that the data have a strong linear relationship. (If your instructor did not cover the correlation coefficient, then you can determine this by looking at the scatter diagram and superimposed regression line.)
   (c) 24 members
   (d) \$1,258.10
   (e) The can expect to raise \$314.60 more.