

## Lesson 6.2.4

**6-137. See below:**

- a. Exponential
- b. The asymptote represents room temperature.
- c.  $y = 10(0.7)^x + 17$
- d. Set  $y = 37^\circ\text{C}$  (normal body temperature); solving gives  $x \approx -1.94$  hours, so about 1.94 hours before 5:12 or about 3:15 PM.
- e. Since no one is logged into the building between 2:51 and 3:48, it must be Foust, who lied about when he last saw the Doctor alive. Could he be the Slasher, or is he a “copycat criminal?”



**6-138. See below:**

- a. Decreasing by 20% means you multiply by 0.8 each time, and the presence of a multiplier implies exponential.
- b.  $y = 23500(0.8^x)$
- c. \$9625.60
- d.  $\approx 6.12$  years
- e. \$42,926.44

**6-139. See below:**

- a.  $x = \frac{1}{2}$
- b. any number except 0
- c.  $x = 10^{23}$

**6-140. See below:**

- a.  $x = 2.236$
- b.  $x = 4.230$
- c.  $x = 0.316$
- d.  $x = 2.021$
- e.  $x = 3.673$

**6-141. See below:**

- a. 16
- b. 12
- c.  $12^4 = 20736$
- d. 54
- e. No, they are not inverses (if they were, then the answers to parts (c) and (d) would have to be 2).

**6-142.** Square it and subtract 5; he dropped in a 76.

**6-143.**  $c(x) = x^2 - 5$

**6-144.**  $x = 17$

**6-145. See below:**

- a.  $\frac{2(x+1)}{x+3}$
- b.  $\frac{3x^2-5x-3}{(2x+1)^2}$

**6-146. See below:**

- a.  $30^\circ$
- b.  $22.6^\circ$

**6-147.**  $y \leq -\frac{3}{4}x + 3, y \geq -\frac{3}{4}x - 3, x \leq 3, x \geq -3$