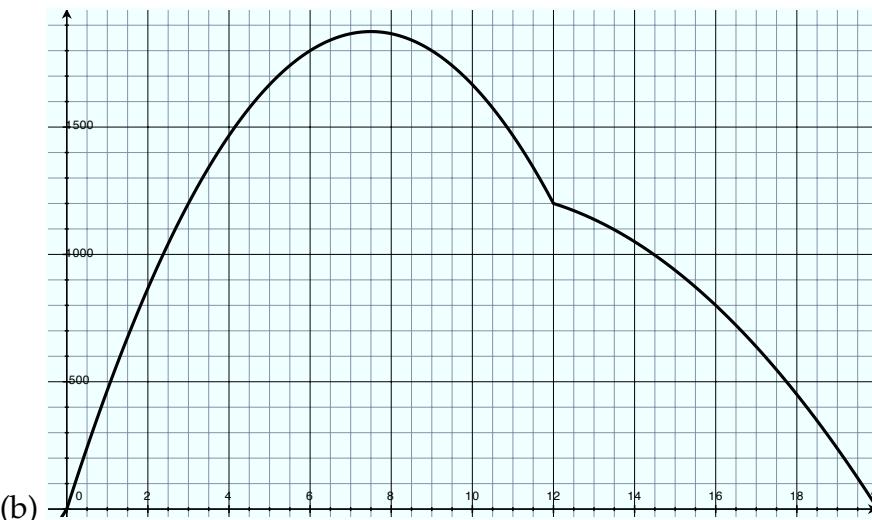1. 1.1292 hours

2.
$$\text{area}(x) = \begin{cases} 4x & \text{if } 0 \le x \le 3, \\ 12 + 6(x-3) & \text{if } 3 \le x \le 4, \\ 18 + \frac{1}{2}(x-4)(6 - 3(x-6)) & \text{if } 4 \le x \le 6 \end{cases}$$

3. (a)
$$M(p) = \begin{cases} p\left(500 - \frac{100}{3}p\right) & \text{if } 0 \le p \le 12, \\ p\left(250 - 12.5p\right) & \text{if } 12 \le p \le 20 \end{cases}$$

(b)

(c) She should charge $7.50 per ticket to make the most money.

4. (a) $x = 32.5949\cos(\frac{53}{32}\pi - \frac{\pi}{32}t), y = 32.5949\sin(\frac{53}{32}\pi - \frac{\pi}{32}t)$ (b) 58.931 m.

5. 1.0193 inches

6. 5.1337 hours

7. The trees are 33.62 feet apart.