1. (a) \( f(t) = 4.15(1.042045)^t \)
   (b) 216 zlobeks
   (c) 
   \[
   t = \frac{\ln(\frac{x}{1.5})}{\ln(1.042045)}
   \]
   (d) In 1965 a stamp costs 60 zlobek.

2. (a) 150
   (b) 19.997
   (c) 375

3. (a) \( P(t) = 41 + 4\sin(\frac{\pi}{24}(t + 14)) \)
   (b) 39
   (c) during the interval from 11.9 to 32.1 days.

4. (a) 40.84 inches/sec
   (b) it takes 6 seconds and coordinates are \((-1.56, -4.75)\)

5. (a) \( x(t) = (220\sqrt{2})t, y(t) = 5480 + (220\sqrt{2})t - 16t^2 \)
   (b) (3025, 6992.5)
   (c) it crashes at 25.7130 seconds at (8000, 2901.5)

6. (a) 1.398 seconds

7. (a) \( l = \frac{200}{\cos \theta} + \sqrt{(100)^2 + (600 - 200 \tan \theta)^2} \)
   (b) 1.107 radians (63.43 degrees)

8. (a) \( N = 500 + 160(12 - x) \)
   (b) \( P = -160x^2 + 2900x - 10060 \)
   (c) price should be $9.06 and profit is $3080

9. (a)
   \[
   y = .75x + 11.5, \quad -6 \leq x \leq -2
   \]
   \[
   y = 10 + \sqrt{4 - x^2}, \quad -2 \leq x \leq 2
   \]
   \[
   y = -.75x + 11.5, \quad 2 \leq x \leq 6
   \]
   (b) Yes, because \( y \geq 11 \) when \(-1.5 \leq x \leq 1.5\).