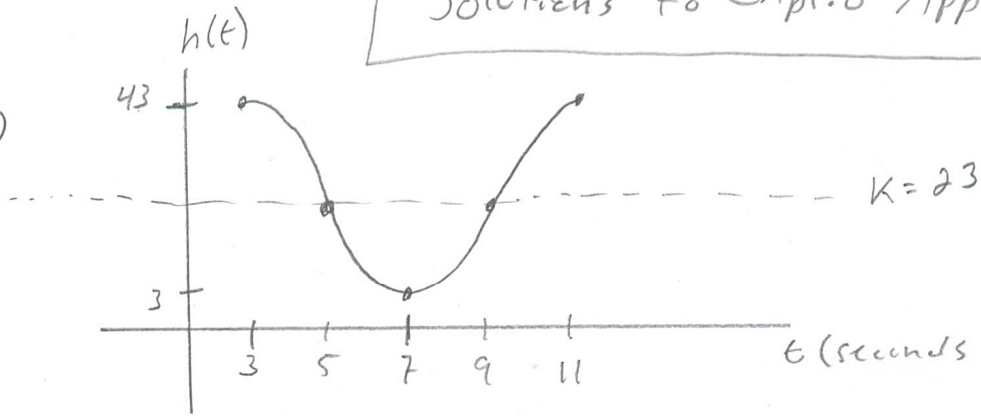


Solutions to Chpt. 8 Application Problems

① a



b) 3 ft

$$B = \frac{2\pi}{8} = \frac{\pi}{4}$$

c)  $h(t) = 23 + 20 \cos\left[\frac{\pi}{4}(t-3)\right]$

d) i)  $8.858 \text{ ft} = h(6)$

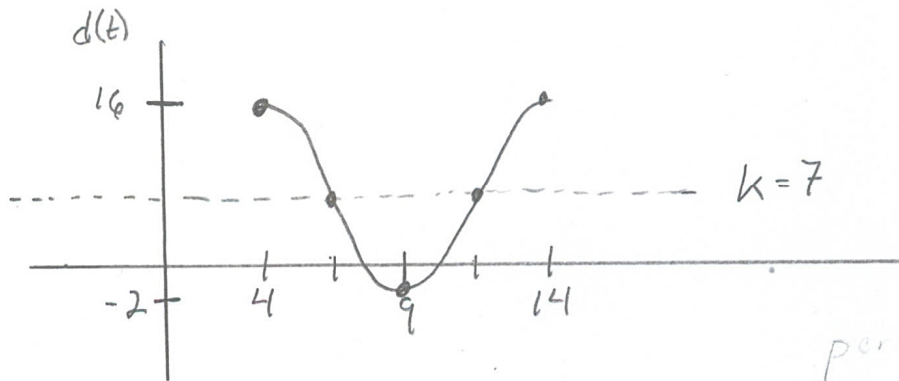
ii)  $33 \text{ ft} = h\left(\frac{13}{3}\right)$

iii)  $23 \text{ ft} = h(9)$

iv)  $8.858 \text{ ft} = h(0)$

e)  $t = 5.322 \text{ seconds}$

② a



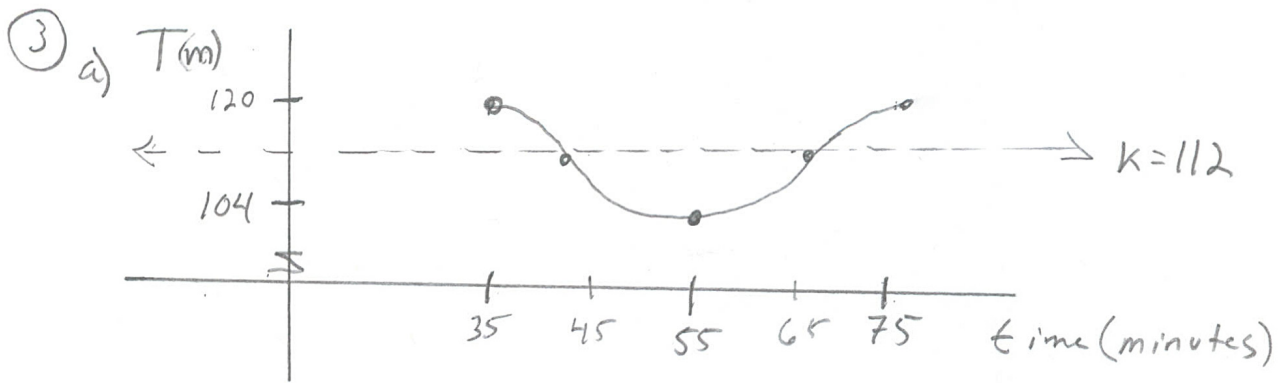
period  $B = \frac{2\pi}{10} = \frac{\pi}{5}$

b)  $d(t) = 7 + 9 \cos\left[\frac{\pi}{5}(t-4)\right]$

c) i)  $14.281 \text{ ft} = d(5)$

ii)  $4.218 \text{ ft} = d(17)$

d) The point was coming out of the water at 0.082 seconds.

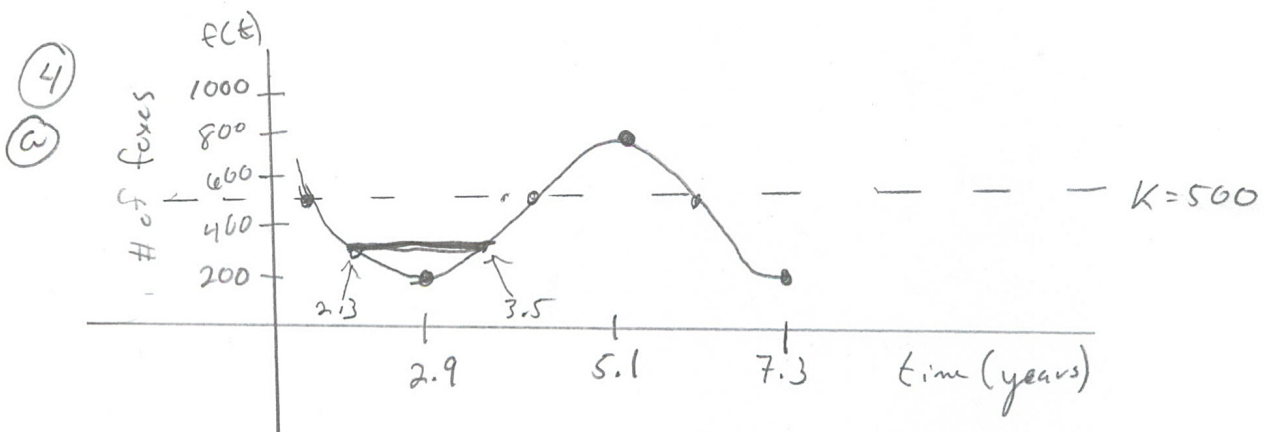


b)  $T(m) = 112 + 8 \cos\left[\frac{\pi}{20}(x-35)\right]$

$B = \frac{2\pi}{40} = \frac{\pi}{20}$

c)  $T(0) = 117.66^\circ F$

d)  $m = 3.391 \text{ sec}, 26.689 \text{ sec}, 43.391 \text{ sec}$

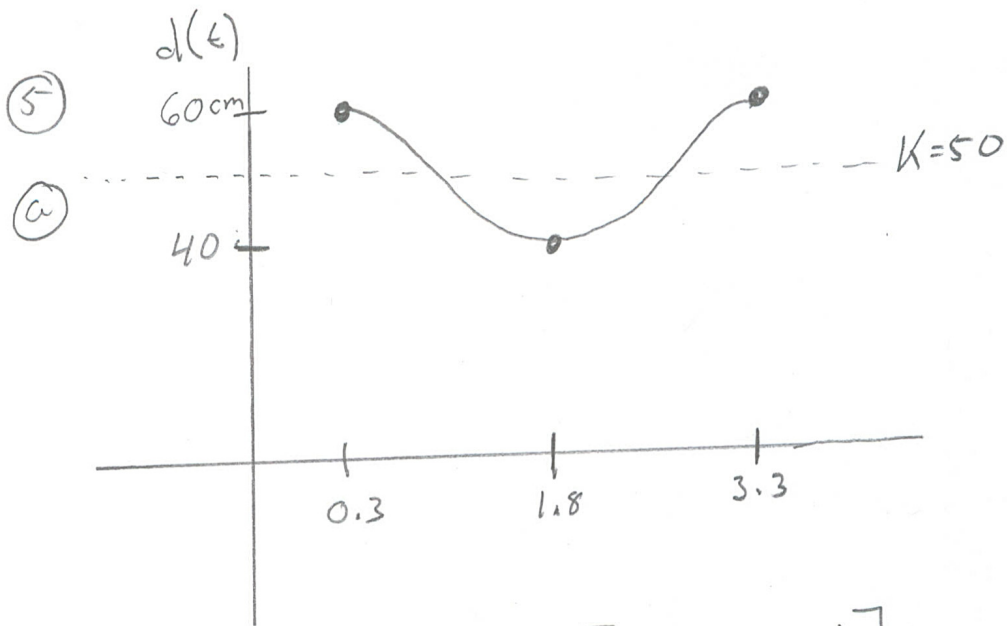


b)  $f(t) = 500 - 300 \cos\left[\frac{2\pi}{4.4}(t - 2.9)\right]$

c)  $f(7) = 227 \text{ foxes}$

d)  $2.311 < t < 3.489$  years is the first time foxes are endangered.

e) see graph

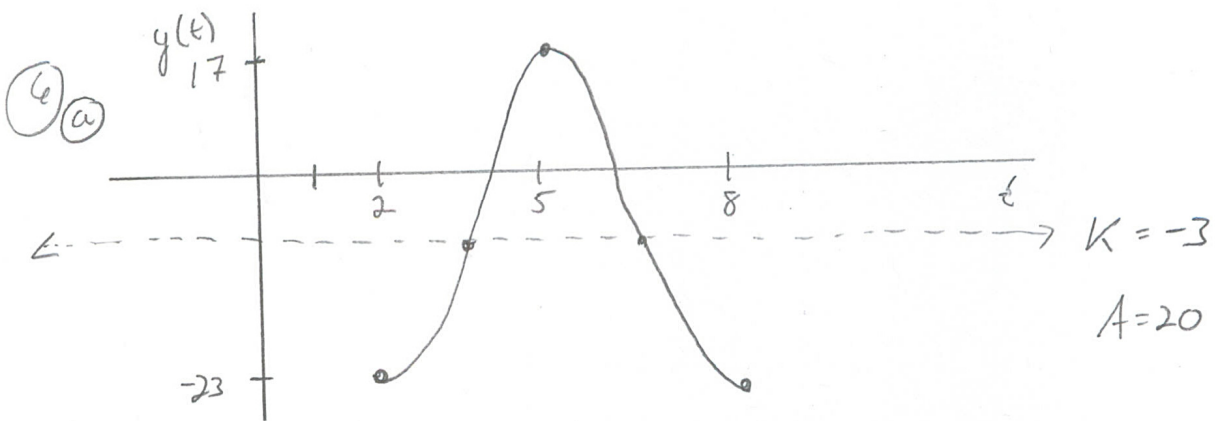


b)  $d(t) = 50 + 10 \cos\left[\frac{2\pi}{3}(t - 0.3)\right]$

c)  $d(17.2) = 43.309 \text{ cm}$

d)  $d(0) = 58.0901 \text{ cm}$

e)  $t \approx 0.085 \text{ sec @ } 59 \text{ cm}$



b)  $y = -3 - 20 \cos\left[\frac{\pi}{3}(t - 2)\right]$

d)  $y(0) = 7 \text{ m}$

c)  $y(2.8) = -16.383 \text{ m}$

e)  $t \approx 0.356 \text{ sec @ } 0 \text{ m}$

$y(6.3) = 1.158 \text{ m}$

$y(15) = -13 \text{ m}$

7 a  $y = 12 + 15 \cos\left[\frac{\pi}{50} x\right]$

b  $y(0) = 27 \text{ m}$

$y(4) = 26.529 \text{ m}$

$y(32) = 5.613 \text{ m}$

c  $2(8.313) = 16.626 \text{ m}$

d  $39.758 \text{ m}$

e 0 mit