1. $Y = (22+x)(500-15x)$ ← max.

from graph. calc. max @ $x = 5\frac{2}{3}$

from table: 6 more trees should be planted in each acre (you can't plant $\frac{2}{3}$ of a tree)

2. $V = L \cdot w \cdot h$

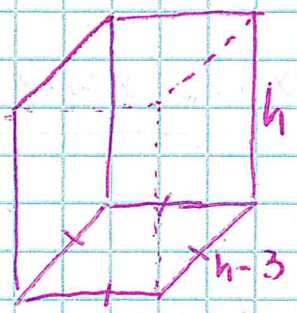
$1800 = L \cdot w \cdot h$

$L = 6h$
$L = W + 18$

So, $1800 = L(L-18)(\frac{1}{6})$

use calc to solve...

$L = 30$ cm

3. 

$V = L \cdot w \cdot h$

$54 = (h-3)^2(h)$ or $h^3 - 6h^2 + 9h - 54 = 0$

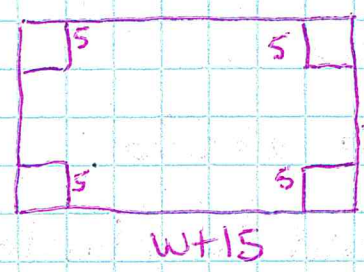
4. $R = (300+25x)(67000-1750x)$ ← max

from calc max @ $x = 13.143$

So the ticket price to max revenue is $628.57.

$\$628.57 = (300+25(13.143))$

5.



$V = L \cdot w \cdot h$

$1250 = (w+15-10)(w-10)(5)$

$1250 = (w+5)(w-10)5$

$250 = w^2 - 5w - 50$

$0 = w^2 - 5w - 300$

$w = 20$

$L = 20+15 = 35$

20" × 35"

6. $V = (5)(4)(3)$ ← current max

$V = 60\ Ft^2$

$2V = (5+x)(4+x)(3+x)$

$120 = (5+x)(4+x)(3+x)$

from calc. $x = 1$

New box: 6' × 5' × 4'

7. $V = L \cdot w \cdot h = 1.5h(h)(6-2.5h)$ ← max

$L + w + h = 6$

$L = 1.5(h)$

from calc. max @ $h = 1.6$

2.4" × 1.6" × 2"

Note: $1.5h + w + h = 6$

$w + 2.5h = 6$

$w = 6 - 2.5h$

$L = 1.5h$

$h = h$

} Sub. into $V = L \cdot w \cdot h$