

①  $V = lwh$

$$945 = x(12x-21)(12x-15)$$

$$945 = x(144x^2 - 180x - 252x + 315)$$

$$945 = x(144x^2 - 432x + 315)$$

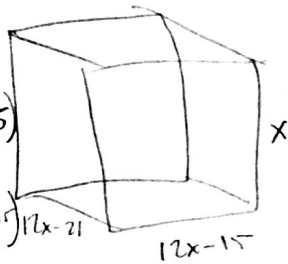
$$945 = 144x^3 - 432x^2 + 315x$$

$$144x^3 - 432x^2 + 315x - 945 = 0$$

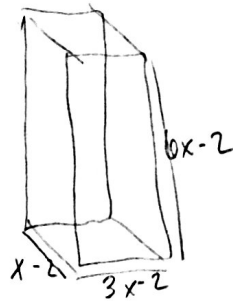
$x = 3$

Use calculator to see where zeros

$$945 = 3(15)(21)$$



②



1:3:6

$V = lwh$

$$V = (x-2)(3x-2)(6x-2)$$

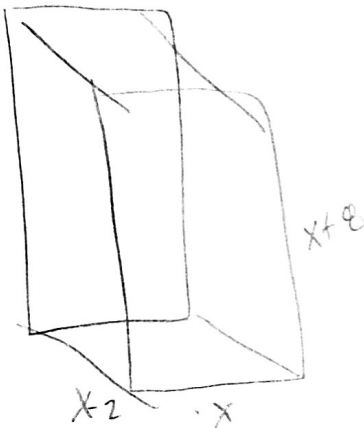
$$112 = (x-2)(3x-2)(6x-2)$$

$x = 2$

Use calculator to see where zeros

pg. 15

③



Volume steel = Volume outside - Volume inside

$$6.42 = x(x-2)(x+8) - 82.58$$

$$= x(x-2)(x+8) - 96$$

$x = -6$   $x = 4$   $x = 4$  feet

Extraneous solutions

④ a.  $A = -1.95x^3 + 70.1x^2 - 188x + 2150$

$x = \#$  yrs since 1985

so 1998 is  $x = 13$

$$\text{Attendance} = -1.95(13)^3 + 70.1(13)^2 - 188(13) + 2150$$

$$-4284.15 + 11846.9 - 2444 + 2150$$

$$7268.75 \approx 7269 \text{ Attendance}$$

b.  $T = 14.8x + 725$

$x = 13$

$$14.8(13) + 725$$

$$917.4 \approx 917$$

Teams

⑤



$V = lwh$

$$V = l(l-5)^2$$

$$250 = l(l-5)^2$$

$$0 = l(l-5)^2 - 250$$

$l = 10$

Dimensions  $l = 10$   $w = 5$   $h = 5$

⑥  $p = 40 - 4x^2$

a. # radios sold (price charge)  $x(40 - 4x^2) = 40x - 4x^3$

b. Revenue - cost per radio = Profit

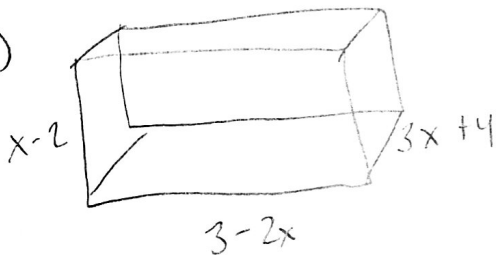
$$(40x - 4x^3) - 15x = -4x^3 + 25x$$

c. 1 million radios makes \$21 million profit

⑦  $P = -6x^3 + 72x \quad x = 2$   
 $= -6(2)^3 + 72(2)$   
 $-48 + 144 = 96$

look at graph of  $-6x^3 + 72x$   
 in the table to see  
 relative max at 2

⑧



$$V = lwh$$

$$= (x-2)(3-2x)(3x+4)$$

$7/3$  is  $2.3$

relative max occurs

at  $(1.76, 1.16)$  so  $7/3$  is  
 too big of a volume and it  
 will not occur.