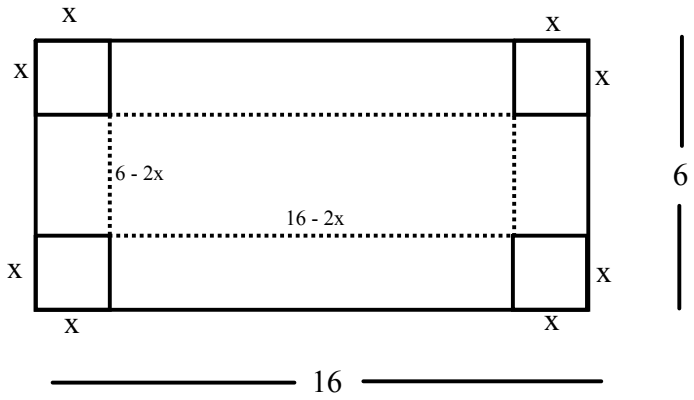
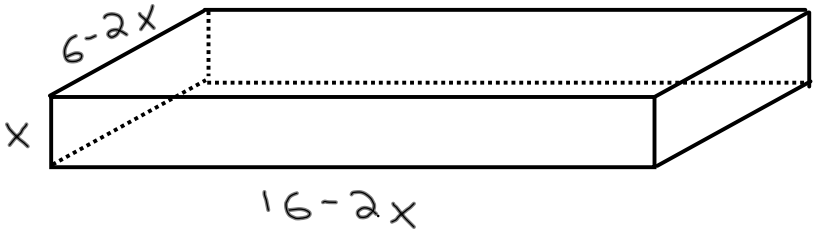




$V(x) = x(16-2x)(6-2x)$

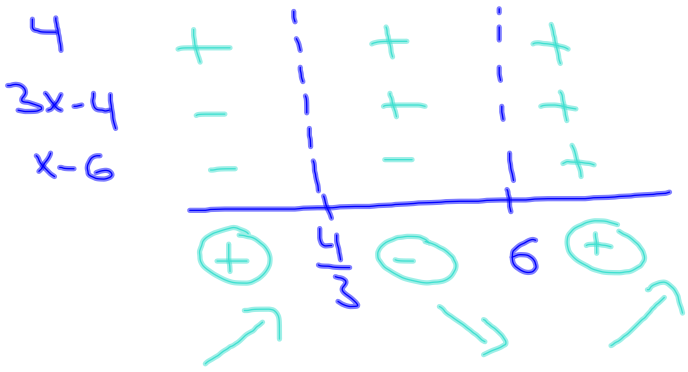
$= x(96 - 44x + 4x^2)$

$V(x) = 4x^3 - 44x^2 + 96x$

$V'(x) = 12x^2 - 88x + 96$

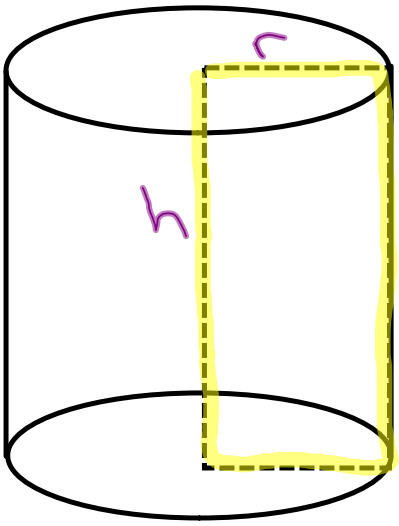
$= 4(3x^2 - 22x + 24)$

$= 4(3x-4)(x-6)$



max volume when $x = \frac{4}{3}$

May 11-12:06 PM



$V = \pi r^2 h$

$V = \pi r^2 (12 - r)$

$V = 12\pi r^2 - \pi r^3$

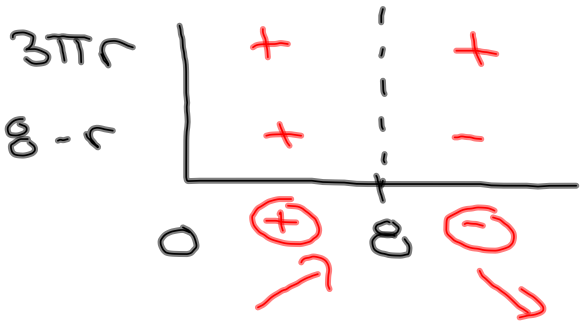
$\frac{dV}{dr} = 24\pi r - 3\pi r^2$

$= 3\pi r(8 - r)$

$2r + 2h = 24$

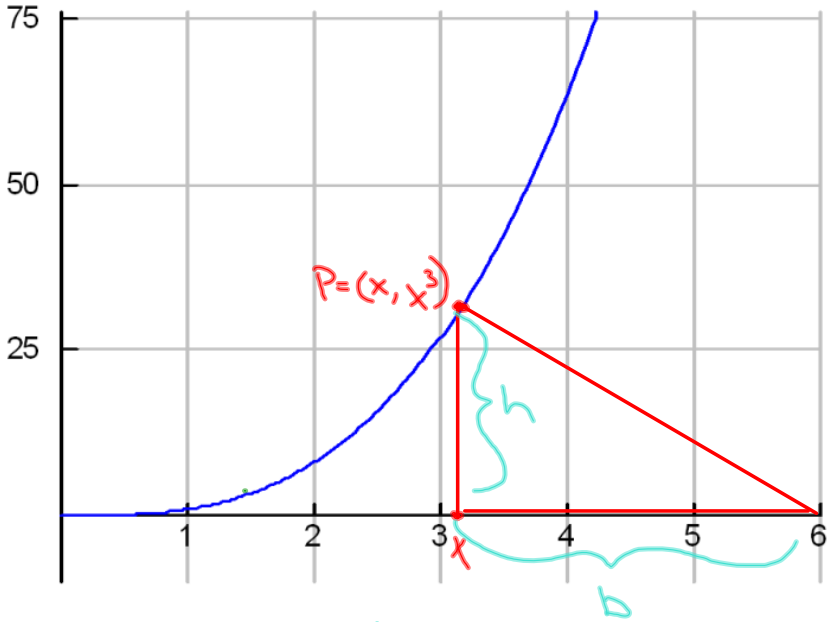
$r + h = 12$

$h = 12 - r$



max volume when

$r = 8,\ h = 4$



$$\text{Area} = \frac{1}{2} \cdot b \cdot h$$

$$A = \frac{1}{2}(6-x)\,x^3$$

$$= \frac{1}{2}x^3(6-x)$$

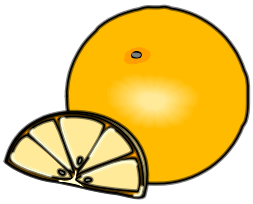
$$A = 3x^3 - \frac{1}{2}x^4$$

$$A' = 9x^2 - 2x^3$$

$$= x^2(9-2x)$$

	0		$\frac{9}{2}$		6
x^2	+	+	+	+	
$9-2x$	+	+	+	−	
		(+) ↗		(−) ↘	

Max area when $x = \frac{9}{2}$



$I = \text{yield} \cdot \text{Price}$

$I = (80+10w)(40-2w)$

$I = 3200 + 240w - 20w^2$

$I' = 240 - 40w$

$= 40(6-w)$

	0		6	
40	+		+	
6-w	+		−	
	(+)	↗	(−)	↘