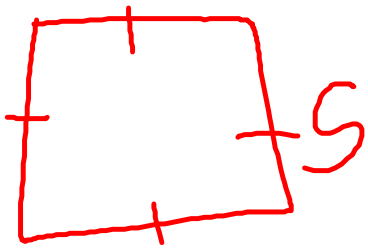
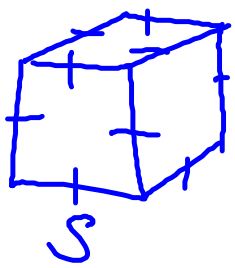
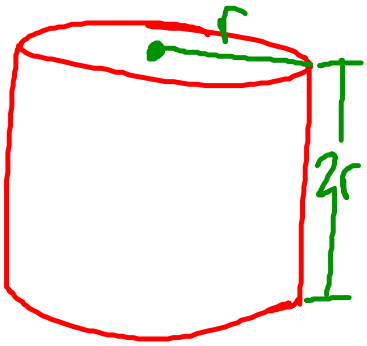
Optimization Review Sheet
Two-Dimensional Optimization

	Rectangle (all four sides)	Rectangle (three sides only)
Optimal Values Occur When	square	length is twice the width
Diagram		
Key Equations	Maximum Area $A = s^2$	Maximum Area $A = lw$ or $A = 2w^2$
	Minimum Perimeter $P = 4s$	Minimum Perimeter $P = 2w + l$ or $P = 4w$
Related Equations (length, width, radius, height)	$s = \sqrt{A}$ $s = \frac{P}{4}$	$w = \sqrt{\frac{A}{2}}$ $w = \frac{P}{4}$ $l = \frac{P}{2}$

Optimization Review Sheet
Three-Dimensional Optimization

	Square-Based Prism	**Cylinder**
Optimal Values Occur When	cube	height = diameter height = 2 × radius
Diagram		
Key Equations	Maximum Volume $V = s^3$	Maximum Volume $V = 2\pi r^3$
	Minimum Surface Area $SA = 6s^2$	Minimum Surface Area $SA = 6\pi r^2$
Related Equations (length, width, radius, height)	$s = \sqrt[3]{V}$ $s = \sqrt{\frac{SA}{6}}$	$r = \sqrt[3]{\frac{V}{2\pi}}$ $r = \sqrt{\frac{SA}{6\pi}}$