4 $xy = 192$

$x + y = S$

1 $y = \frac{192}{x}$

2 $x + \frac{192}{x} = S$

3 $S' = 1 - \frac{192}{x^2}$ $S'' = \frac{384}{x^3}$

$S''(13.9) > 0$

4 $0 = 1 - \frac{192}{x^2}$

$1 = \frac{192}{x^2}$

Since S is a

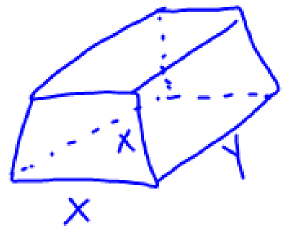
22 $SA = 337.5$

$$337.5 = 2x^2 + 4xy$$

$$\boxed{V = max}$$

$$V = x^2 y$$

1 $337.5 - 2x^2 = 4xy$



$$\frac{337.5 - 2x^2}{4x} = y$$

2 $V = x^2\left(\frac{337.5 - 2x^2}{4x}\right)$

$$V = \frac{337.5x}{4} - \frac{x^3}{2}$$

$$V' = \frac{337.5}{4} - \frac{3}{2}x^2$$

Use linear Approximation to find $\sqrt[3]{8.5}$

1. Find your basic EQ.

$$y = \sqrt[3]{x} \quad \text{or} \quad y = x^{1/3}$$

2. use $x = 8$ $dx = .5$

$y = 2$

$(8, 2)$

3. $$y' = \frac{1}{3}x^{-2/3} = \frac{1}{3(\sqrt[3]{x})^2}$$

$$y' = \frac{1}{3(\sqrt[3]{8})^2} = \frac{1}{12} \leftarrow \text{slope}$$

4. Need tangent line

HW:

Approx

1. $\sqrt{15.5}$

2. $\sqrt{50}$

3. $\sqrt{98}$

3. $\sqrt[3]{127}$