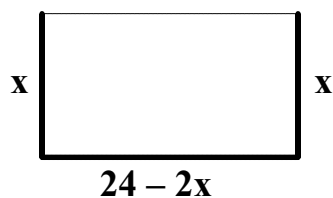
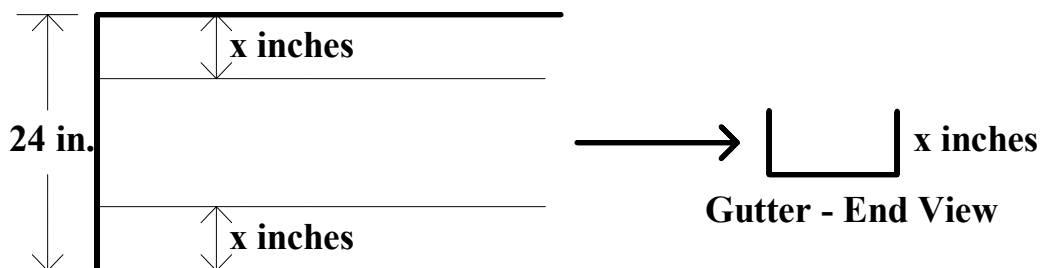


Calculus Worksheet #6 Unit 1 Selected Solutions

Use calculus to solve the following problems. Show your work and your solutions neatly organized. Express any irrational solutions rounded to three significant digits.

4. A piece of sheet metal 24 inches wide is to be bent to form a gutter with a rectangular cross section. Please refer to the diagram. If x represents the width that is bent up along each edge, then what value of x corresponds to a maximum cross sectional area?



$$A = f(x) = x(24 - 2x)$$

$$f(x) = 24x - 2x^2$$

$$f'(x) = 24 - 4x$$

$$24 - 4x = 0$$

$$x = 6$$

x	A
5	70
6	72
7	70

$\left. \begin{array}{l} \text{ } \\ \text{ } \\ \text{ } \end{array} \right\} \leftarrow \text{maximum}$

Six inches should be bent up along each edge.