Stewart Section 4.6

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Optimization Problems

The following is an adaptation of the problem solving principles listed on page 88 of the text:

1. Understand the problem

2. Draw a diagram

3. Introduce notation (Q)

4. Express Q in terms of the other symbols

5. Find ralationships among these variables

6. Find the *absolute* maximum or minimum

Step 1

Understand the problem

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- What are the given quantities?
- What are the given conditions?

Step 2

Draw a diagram

Identify the given and required quantities on the diagram.

Step 3

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Label the diagram with these symbols.

If possible, choose symbols which suggest the quantity - say, A for area.

Step 4

Express Q in terms of the symbols defined in Step 3.

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Use these equations to eliminate all but one of the variables in the expression for Q.

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Use these equations to eliminate all but one of the variables in the expression for Q.

Once Q is expressed as a function of a single variable, say $Q = f(x)$,

write down the domain of this function.

Step 6

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If the domain of f is a closed interval, use the *closed interval method* from Section 4.2.