

Chapter 3

Optimization by exhaustive search

```
% This file optimizes emergency vehicle response times  
% following pages 64-68 of the text.
```

```
% Here is systematic search.
```

```
x_best = 0;  
y_best = 0;  
t_best = avtime(0,0);  
  
for x = 0: 0.1: 6  
    for y = 0: 0.1: 6  
        t = avtime(x,y);  
        if t < t_best  
            x_best = x;  
            y_best = y;  
            t_best = t;  
        end  
    end  
end  
  
x_best  
y_best  
t_best
```

```
function T = avtime(x,y)
% This function computes average response time for emergency
% vehicles, from page 64 of the text.
% Here is the constant matrix of call frequencies.
% Notice that lower index values correspond to the lower left
% of the table on page 64.
N = [0 2 3 1 1 1
     10 6 3 1 3 1
     8 5 2 1 0 0
     5 3 3 0 1 2
     2 1 1 2 3 2
     3 0 1 4 2 1];

s = 0;
for m = 1:6
    for n = 1:6
        s = s + N(m,n)*((x - n + .5)^2 + (y - m + .5)^2)^(.91/2);
    end
end

T = 3.2 + (1.7/84)*s;
```