

ME 1020 Engineering Programming with MATLAB

Problem 5.33:

33. A square metal plate is heated to 80°C at the corner corresponding to $x = y = 1$. The temperature distribution in the plate is described by

$$T = 80e^{-(x-1)^2}e^{-3(y-1)^2}$$

Obtain the surface and contour plots for the temperature. Label each axis. What is the temperature at the corner corresponding to $x = y = 0$?

```
% Problem 5.33
clear
clc
disp('Problem 5.33: Scott Thomas')

N = 30;
x = linspace(0,1,N);
y = linspace(0,1,N);
[X,Y] = meshgrid(x,y);
T = 80*exp(-(X - 1).^2).*exp(-3*(Y - 1).^2);

%mesh(X,Y,T)
contour(X,Y,T)
ylabel('y'), xlabel('x'), zlabel('z')
title('Problem 5.33: Scott Thomas')
grid on

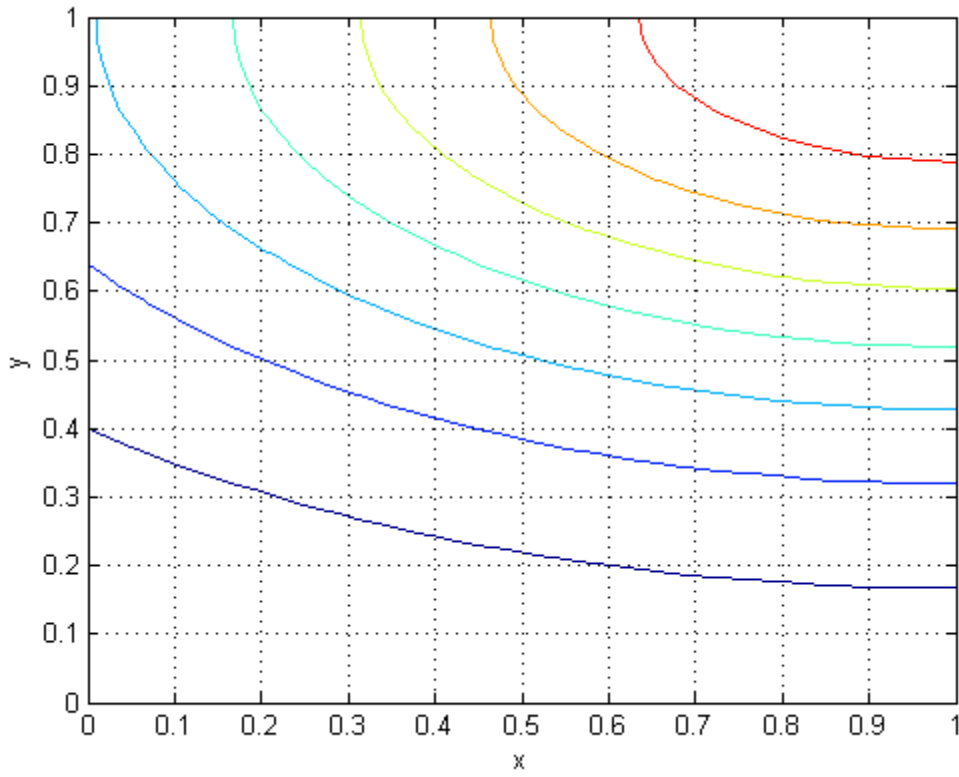
T(1,1)
```

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ans =

1.4653

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