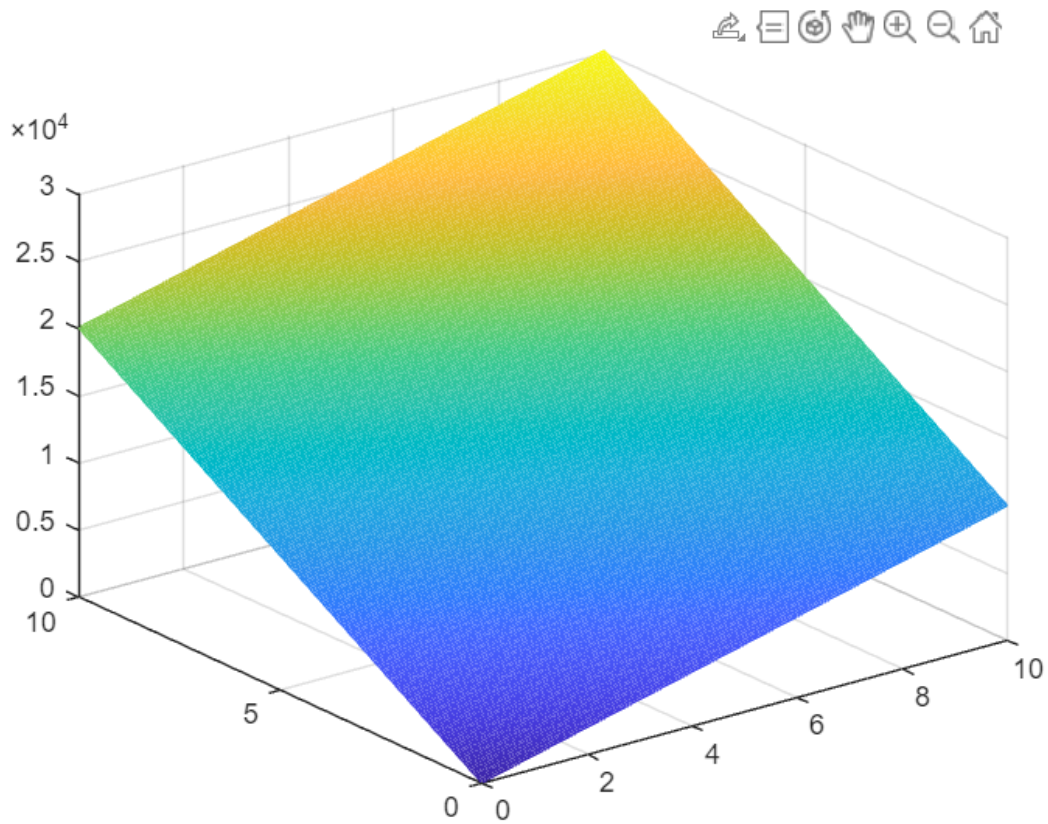


Chapter 3

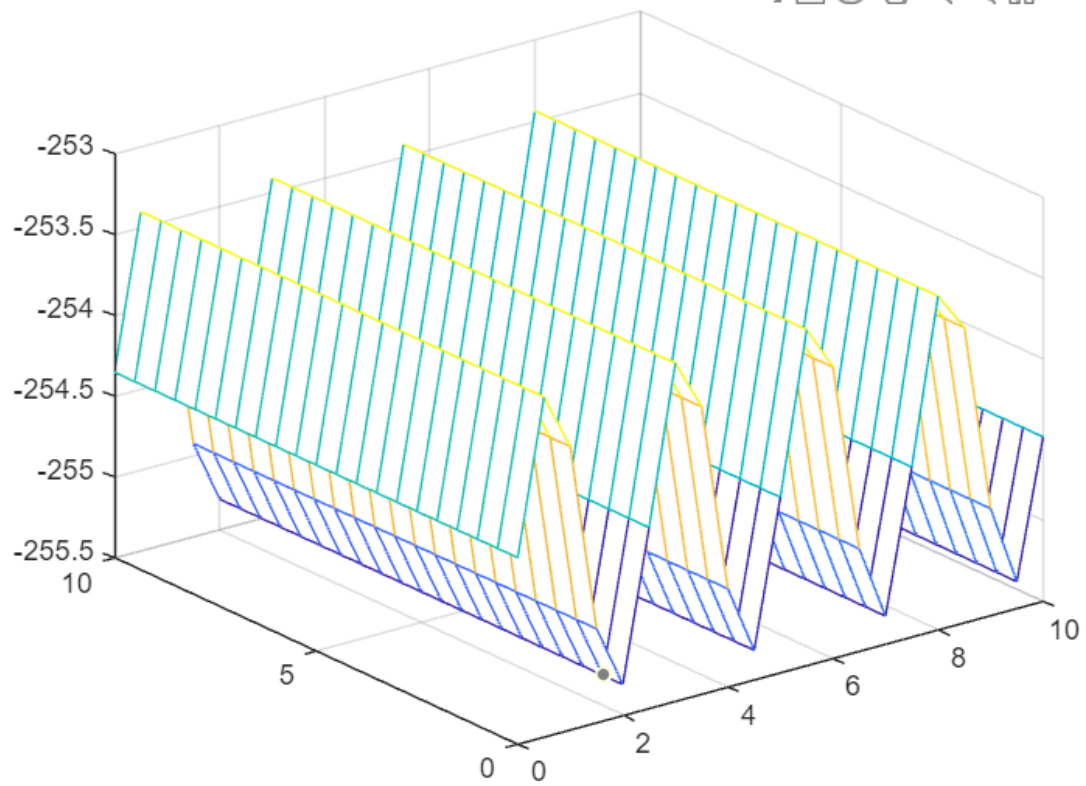
(1) $g(x) = x_1^2 + 2x_2^2 - 20$

```
[x1, x2] = meshgrid(0:0.05:10);  
gx = x1.^2 + 2*x2.^2 - 20;  
mesh(x1, x2, gx);
```



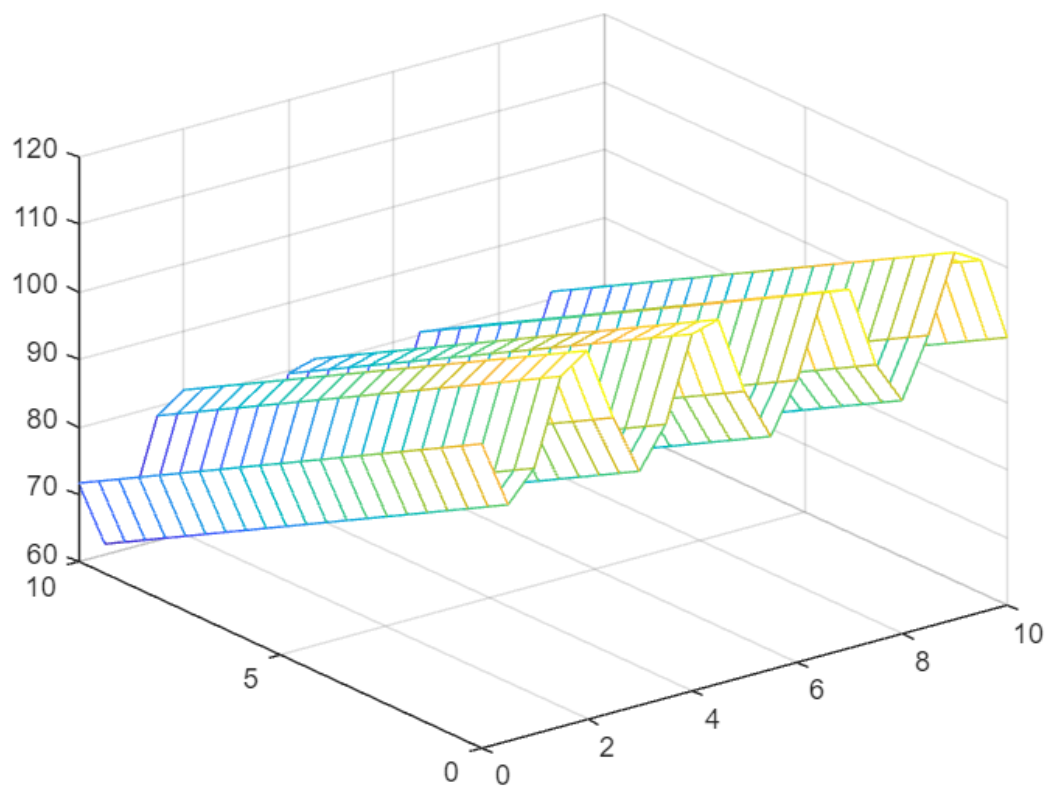
(2) $g(x) = \sin\left(\frac{5x_1}{2}\right) - \frac{(x_1^2+4)(x_2-1)}{20} + 2.2$

```
[x1, x2] = meshgrid(0:0.5:10);  
gx = sin(5*x1/2) - (x1.^2+4)*(x2-1)/20+2.2;  
mesh(x1, x2, gx)
```



(3) $g(x_1, x_2) = x_1(1 + 0.1\sin 10x_1) - x_2\sin x_2$

```
[x1, x2] = meshgrid(0:0.5:10);
gx = x1*(1+0.1*sin(10*x1))-x2*sin(x2);
mesh(x1,x2,gx)
```



$$(4) g(x_1, x_2) = \begin{cases} 3 + 0.1 \times (x_1 - x_2)^2 - (x_1 + x_2)/\sqrt{2} \\ 3 + 0.1 \times (x_1 - x_2)^2 + (x_1 + x_2)/\sqrt{2} \\ (x_1 - x_2) + 6/\sqrt{2} \\ -(x_1 - x_2) + 6/\sqrt{2} \end{cases}$$

```
[x1, x2] = meshgrid(0:0.5:10);
gx = 3+0.1*(x1-x2)^2-(x1-x2)/sqrt(2);
mesh(x1,x2,gx)
```

