Exercises: Anonymous Functions

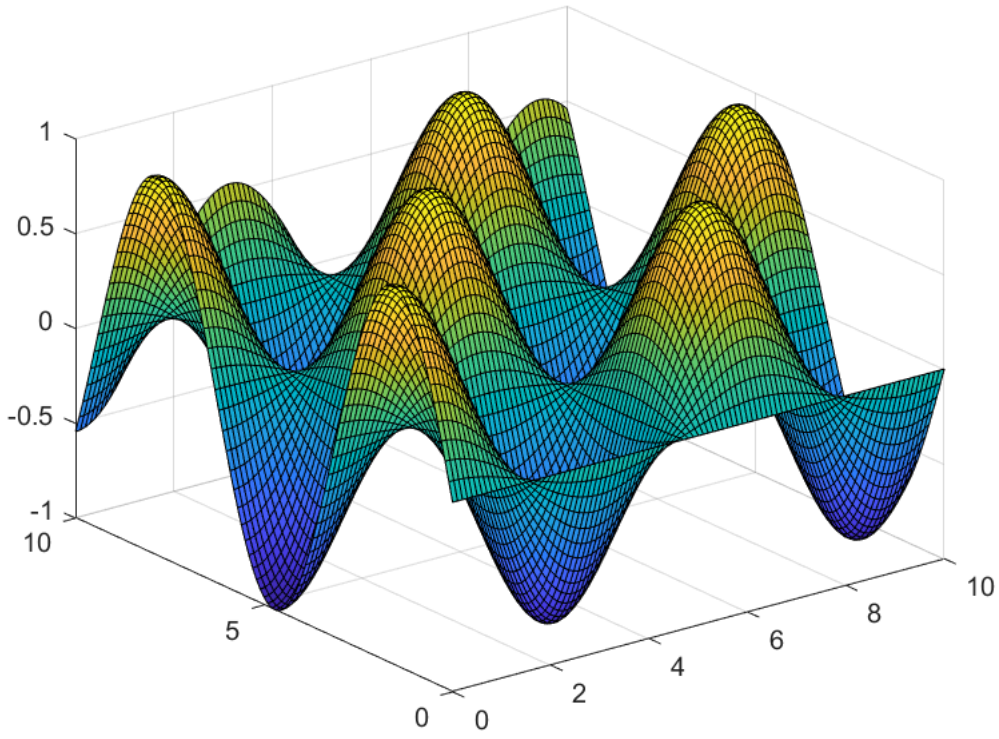
Task 1: Define an anonymous function for $f(x) = cos(x) \cdot sin(y)$ using a function handle.

```
f=@(x,y) cos(x).*sin(y);
```

Make a surface plot of f(x,y) for x,y=[0:0.1:10] to check the implementation.

Hint: To plot the function on a grid you will have to use the builtin function meshgrid.

```
[X,Y]=meshgrid(0:0.1:10);
surf(X,Y,f(X,Y))
```



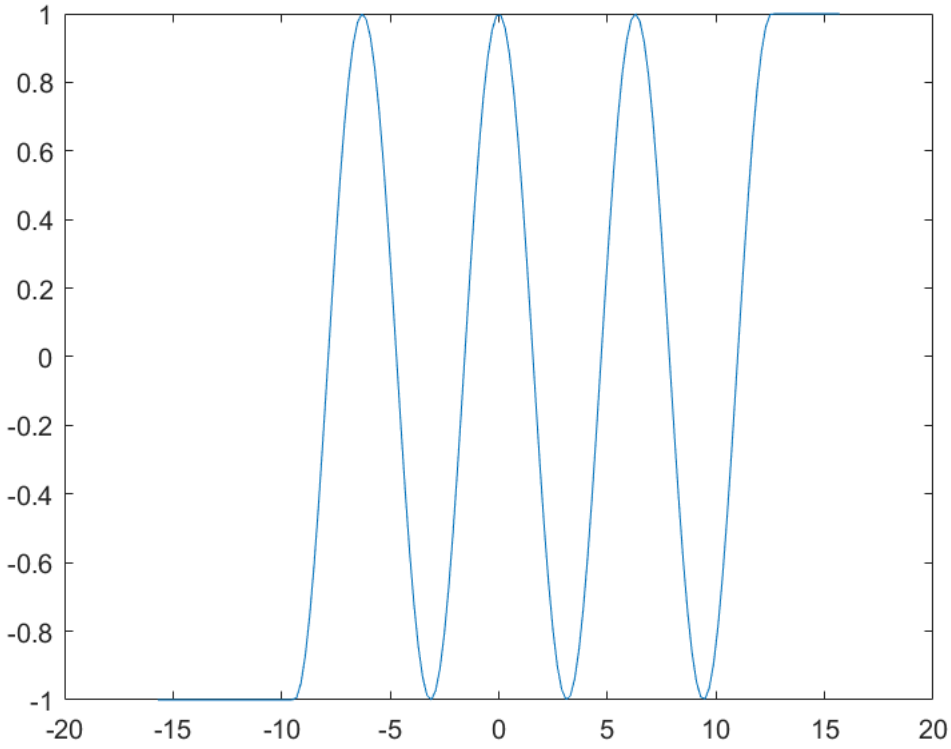
Task 2*: Implement the piecewise defined function

$g(x) = -1 \text{ for } x < 3\pi, \cos(x) \text{ for } -3\pi < x < 4\pi, 1 \text{ for } x > 4\pi$ using a function handle.

Hint: use the fact that comparison statements like (x>5) evaluate to 1 if true and zero if false. They can thus be used as prefactors.

```
% define this function using a function handle and logical operators
g=@(x) -(x<-3*pi)+((x<4*pi).*(x>-3*pi)).*cos(x)+(x>4*pi);

x=[-5*pi:0.2:5*pi];
plot(x,g(x))
```


1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
-20
-15
-10
-5
0
5
10
15
20