



King Saud University
College of Science
Department of Statistics & OR
Second Semester 1433-1434



Second midterm examination - CSC 202

Question 1

Write a MATLAB script file that allows inputting a value for the variable x , and evaluates the following polynomial for that value:

$$1 - x + x^2 - x^3 + \dots + x^{10}$$

a) using a for-loop

b) using a while-loop

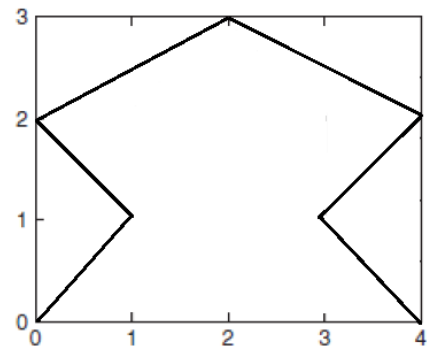
Question 2

Rewrite the following script using if-else statement:

```
d = floor(10*rand);  
switch d  
case {2, 4, 6, 8}  
disp( 'Even' );  
case {1, 3, 5, 7, 9}  
disp( 'Odd' );  
otherwise  
disp( 'Zero' );  
end
```

Question 3

Draw a shape similar to the one depicted in Figure, by a Matlab command.



Question 4

Given the quadratic function: $f(x) = x^2 - 8x + 15$,

1. Write a program to compute and display the values of x and $f(x)$ over the range $(0,8)$ with step 0.5.

2. Plot a graph of $f(t)$, use a grid, write the text 'Parabola example' as a title on top of the graph, label the x-axis as x , label the y-axis as $f(x)$, and label the point $(4,-1)$ as vertex

Question 5

Find the sum of the first 50 terms of the following series by vectorization:

$$\ln(2) = 1 - \frac{1}{2} + \frac{1}{3} - \frac{1}{4} + \dots$$

Model Answer:

Q1)

a)

```
x = input('Enter value for x: ');
```

```
P = 0;
```

```
sign = 1;
```

```
for i = 0:10
```

```
    P = P + sign * x.^i;
```

```
    sign = - sign;
```

```
end
```

```
disp(P);
```

b)

```
x = input('Enter value for x: ');
```

```
P = 0;
```

```
sign = 1;
```

```
i=0;
```

```
while(i<=10)
```

```
    P = P + sign * x.^i;
```

```
    sign = - sign;
```

```
    i = i + 1;
```

```
end
```

```
disp(P);
```

Q2)

```
d = floor(10*rand);
```

```
if (d==2)||(d==4) ||(d==6) ||(d==8)
```

```
    disp( 'Even' );
```

```
elseif (d==1)||(d==3)||(d==5) ||(d==7)||(d==9)
```

```
    disp( 'Odd' );
```

```
else
```

```
    disp( 'Zero' );
```

```
end
```

Q3)

```
plot([0 1 0 2 4 3 4],[0 1 2 3 2 1 0]);
```

Q4)

```
x = 0:0.5:8;  
f = x.^2 - 8*x + 15;  
disp([x' f']);  
plot(x,f), grid,  
xlabel('x'), ylabel('f(x)'),  
title('Parabola example'),  
text(4,-1,'vertex');
```

Q5)

```
x = 1:2:49;  
y = 2:2:50;  
S = sum(1./x) - sum(1./y);  
disp(S);
```