



Attempt the following questions.

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Total Mark: 10

Question 1: (2 Marks)

The following matrix is entered in MATLAB:

```
>> A=[3 2 1;0:0.5:1;linspace(6, 8, 3)]
```

- (a) Write out the resulting matrix.
- (b) Use colon notation to write a single-line MATLAB command to multiply the second row by the third column and assign the result to the variable C.

Question 2: (2 Marks)

Develop a vectorized version of the following code:

```
tstart=0; tend=20; ni=8;  
t(1)=tstart;  
y(1)=12 + 6*cos(2*pi*t(1)/(tend-tstart));  
for i=2:ni+1  
    t(i)=t(i-1)+(tend-tstart)/ni;  
    y(i)=10 + 5*cos(2*pi*t(i)/(tend-tstart));  
end
```

Question 3: (3 Marks)

An amount of money P is invested in an account where interest is compounded at the end of the period. The future worth F yielded at an interest rate i after n periods may be determined from the following formula:

$$F = P(1+i)^n$$

Write an M-file that will calculate the future worth of an investment for each year from 1 through n . The input to the function should include the initial investment P , the interest rate i (as a decimal), and the number of years n for which the future worth is to be calculated. The output should consist of a table with headings and columns for n and F .

Question 4: (3 Marks)

The “*divide and average*” method, an old-time method for approximating the square root of any positive number a , can be formulated as:

$$x = \frac{x + a/x}{2}$$

Write a well-structured function to implement this algorithm.

Good Luck
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