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Course Completion Certificate

Sriharshitha Deepala

has successfully completed 100% of the self-paced training course

MATLAB Onramp

DIRECTOR, TRAINING SERVICES

10 November 2020

MathWorks® | Training Services

Progress Report

Name: Sriharshitha Deepala

Course: MATLAB Onramp

Progress: 100% complete (as of 10 November 2020)

Chapters

1. Course Overview 100%
2. Commands 100%
3. MATLAB Desktop and Editor 100%
4. Vectors and Matrices 100%
5. Indexing into and Modifying Arrays 100%
6. Array Calculations 100%
7. Calling Functions 100%
8. Obtaining Help 100%
9. Plotting Data 100%
10. Review Problems 100%
11. Importing Data 100%
12. Logical Arrays 100%
13. Programming 100%
14. Final Project 100%
15. Conclusion 100%

Release: R2020a | Language: English

QUESTIONS

1. **Arithmetic operations:** Compute the following quantities:
   - $\frac{2^5}{2^5-1}$ and compare with $(1-\frac{1}{2^5})^{-1}$.
   - $3\frac{\sqrt{5}-1}{(\sqrt{5}+1)^2}-1$. The square root $\sqrt{x}$ can be calculated with the command `sqrt(x)` or `x^0.5`.
   - Area $=\pi r^2$ with $r=\frac{1}{\pi^3}-1$. (π is `pi` in MATLAB.)

2. **Exponential and logarithms:** The mathematical quantities e^x, $\ln x$, and $\log x$ are calculated with `exp(x)`, `log(x)`, and `log10(x)`, respectively. Calculate the following quantities:
   - e^3, $\ln(e^3)$, $\log_{10}(e^3)$, and $\log_{10}(10^5)$.
   - $e^{\pi\sqrt{163}}$.
   - Solve $3^x=17$ for x and check the result. (The solution is $x=\frac{\ln 17}{\ln 3}$. You can verify the result by direct substitution.)

3. **Trigonometry:** The basic MATLAB trigonometric functions are `sin`, `cos`, `tan`, `cot`, `sec`, and `csc`. The inverses, e.g., arcsin, arctan, etc., are calculated with `asin`, `atan`, etc. The same is true for hyperbolic functions. The inverse function `atan2` takes two arguments, y and x, and gives the four-quadrant inverse tangent. The argument of these functions must be in radians. Calculate the following quantities:
   - $\sin\frac{\pi}{6}$, $\cos\pi$, and $\tan\frac{\pi}{2}$.
   - $\sin^2\frac{\pi}{6}+\cos^2\frac{\pi}{6}$. (Typing `sin^2(x)` for $\sin^2 x$ will produce an error).
   - $y=\cosh^2 x-\sinh^2 x$, with $x=32\pi$.

```
fprintf("Question-1\n");
fprintf("(a). \t");
syms a b
a= 2^5/(2^5-1);
b=inv(1-(1/2^5));
if(a==b)
    fprintf ("a = b \n");
elseif(a>b)
    fprintf ("a > b \n");
else
    fprintf ("a < b \n");
end
fprintf("(b).\t");
sym m
m= 3*((sqrt(5)-1)/(sqrt(5)+1)^2)-1;
fprintf('%f\n',m);
fprintf("(c). \t");
syms r Area
r = (pi)^(1/3)-1;
Area = pi*(r^2);
fprintf('Area = %f', Area)
```

```
Question-1
(a).  a = b
(b).
ans =

m

-0.645898
(c).  Area = 0.678099
```

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```
fprintf("Question-2\n");
fprintf("(a).\t");
fprintf("%f\t,",exp(3));
fprintf("%f\t,",log10(exp(3)));
fprintf("%f\n",log10((10)^5));
fprintf("(b).\t");
fprintf("%d\t", exp((pi*sqrt(163))));
fprintf("\n");
fprintf("(c).\t");
syms x y
y= 3^x==17;
sol= solve(y);
fprintf("%f\t,",sol);
fprintf("%f",3^sol);
```

```
Question-2
(a). 20.085537 ,1.302883 ,5.000000
(b). 262537412640768256
(c). 2.578902 ,17.000000
```

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```
fprintf("Question-3\n");
fprintf("(a).\t");
fprintf('sin(pi/6) = %f\t,',sin(pi/6));
fprintf('cos(pi) = %f\t,',cos(pi));
fprintf('tan(pi/2) = %f\n',tan(pi/2));
fprintf('(b).\t');
fprintf('%d\n',(sin(pi/6))^2+(cos(pi/6))^2);
fprintf('(c).\t');
syms x y
x = 32*pi;
y = (cosh(x))^2-(sinh(x))^2;
fprintf('y = %d\t',y);
```

```
Question-3
(a). sin(pi/6) = 0.500000 ,cos(pi) = -1.000000 ,tan(pi/2) =
 16331239353195370.000000
(b). 1
(c). y = 0
```

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