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Using MATLAB to solve the following

(1)

The value of π can be estimated from the expression:

$$\frac{2}{\pi} = \frac{\sqrt{2}}{2} \cdot \frac{\sqrt{2+\sqrt{2}}}{2} \cdot \frac{\sqrt{2+\sqrt{2+\sqrt{2}}}}{2} \cdot \ldots$$

Write a MATLAB program in a script file that determine π for any number of terms. The program asks the user to enter the number of terms, and then calculates the corresponding value of π. Execute the program with 5, 10, and 40 terms. Compare the result with `pi`. (Use `format long`.)

(2)

Determine the solution of the following differential equation that satisfies the given initial conditions. Plot the solution for $0 \le t \le 7$.

$$\frac{d^2y}{dt^2} - 0.08\frac{dy}{dy} + 0.6t = 0, \quad y(0) = 2, \quad \left.\frac{dy}{dx}\right|_{x=0} = 3$$