MATLAB Exercises

Part 1: Calculate the following expressions using MATLAB:

1) $\sqrt{5.2^3} + \dfrac{15^{\pi}}{7.5}$

2) $\pi^{3/2} - \sqrt{\dfrac{85}{5^{0.3}}}$

3) $4.6\,(54 - 9\pi) + \tan^{-1}(15)$

4) $10\sqrt{e^{\pi}} + 5\,\tan^{-1}(10°)$

5) $e^{2a} + 4\sin(40°)$, $where\ a = 2.5$

6) $\log_{10}(e) + 5\pi X^{3/2}$, $where\ X = 10.3$

7) $\sqrt{\dfrac{5\,\sin^2(27°) + 20\pi}{[\log_{10}(Y^3)]^2}}$, $where\ Y = 1.5$

Part 2: Use MATLAB to solve the following problems:

1) Find the sum of all the odd integer numbers between 100 and 600.

2) Find the values of X, Y and Z for the following system of equations:

$$2Z - 4Y + X = 5$$
$$9X + 81 - 5Y + Z = 23$$
$$10Y - 1.5Z = X - 14$$

3) Find the roots for the function $y = x^6 + 3.5x^5 - 87.5x^4 - 491.5x^3 - 63.5x^2 + 2180x + 1050$

4) A small object is vertically projected upwards with an initial velocity (V_0). Write a code that finds the maximum height (H) the object reaches (Neglect air resistance) given the initial velocity by the user.

5) Find the simplest form of this equation:

$$\frac{(x^2 + 2x - 5)(20 - x - 3x^3)}{x - 1}$$

6) Write a MATLAB code that calculates the **surface area of a cylinder**, given its base radius (**r**) and height (**h**). **r** and **h** values are given by the user.

NOTE: If one of the input values is negative or zero, a warning message should appear to the user and values must be re-entered.

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