

MATH.2720 Introduction to Programming with MATLAB
Homework on Basic Functions and Assigning Values to Variables (Due 1/30)

Create a script file containing commands to carry out the following calculations. Use comments in your file to indicate the problem number. Please email your file to me at `stephen_pennell@uml.edu`

1. The prices of an oak tree and a pine tree are \$54.95 and \$39.95, respectively. Find the total cost of 16 oak trees and 20 pine trees, rounded off to the nearest dollar.
2. The combined resistance R_T of three resistors in parallel is given by

$$R_T = \frac{1}{\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}}$$

where R_1 , R_2 , and R_3 are the resistances of the three resistors. Assign the values 10, 25, and 40 to R_1 , R_2 , and R_3 and calculate the value of R_T .

3. The monthly payment M on a loan amount of P for y years and interest rate r is given by

$$M = \frac{Pr/12}{1 - (1 + r/12)^{-12y}}$$

Define the variables $P = 85000$, $y = 15$, and $r = 0.05$. Calculate both the monthly payment M **and** the total amount of money T paid over the life of the loan.

4. The ideal gas law relates the pressure p , volume V , and temperature T of an ideal gas:

$$pV = nRT$$

where n is the number of moles of gas and $R = 8.31 \text{ joule/}^\circ K \cdot \text{mole}$ is the universal gas constant. Calculate the pressure of 2 moles of an ideal gas at a temperature of $300^\circ K$ and a volume of 0.1 m^3 .