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**CS 6B Reg: 173627**

**Task 1:**

**Code:**

%Trapezoidal rule (0.5-2)

V = [0.5 2 3 4 6 8 10 11];

p = [336 294.4 266.4 260.8 260.5 249.6 193.6 165.6];

h1 = V(2)-V(1);

sum1 = (h1/2) \* (p(1)+p(2));

%1/3 Simpsons Rule (2 - 4)

h2 = V(3)-V(2);

sum2 = (h2/3)\*(p(2)+4\*p(3)+p(4));

%3/8 Simpsons Rule (4 - 10)

h3 = V(5) - V(4);

sum3 = ((3\*h3)/8) \* (p(4) + 3\*p(5) + 3\*p(6) + p(7));

%Trapezoidal rule (10 - 11)

h4 = V(8)-V(7);

sum4 = (h4/2) \* (p(7)+p(8));

answer = sum1 + sum2 + sum3+ sum4;

fprintf('The Total work is %.3f', answer);

**Output:**



**Task 2:**

**Code:**

syms t

g = 9.81;

m = 68.1;

cd = 0.25;

x = 0:(10/6):10;

fun = @(t) ( sqrt((g\*m)/cd) ) \* tanh( (sqrt((g\*cd)/m)) \* t);

h = 10/6;

y = fun(x);

%Trapezoidal rule for 6 intervals or (we could use trapezoidal on 6 and sum

%them up seperately, interval example (0-1.666) y = velocity

% h/2(fx2+fx1) + h/2 (fx3+fx2) = h/2\*((fx3+fx1)+2\*(fx2))

distance = (h/2)\*((y(1)+y(7)) + 2 \* (y(2) + y(3) + y(4) + y(5) + y(6)));

fprintf('The total distance travelled is %.8f',distance);

**Output:**

