Date of Assignment: 20.01.2025
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# Assignment 3(b)

## Question

Check whether the system of equation has unique solution, infinitely many solutions or no solution. If there exist a unique solution find out the solution.

$-x+3y+7z=5$
$-2x+6y+14z=10$
$x-y-z=-2$

## Code

```
Coeff_matrix = [-1 3 7; -2 6 14; 1 -1 -1];
Const_matrix = [5; 10; -2];
disp('Coefficient Matrix = ');
disp(Coeff_matrix);
disp('Constant Matrix = ');
disp(Const_matrix);
[NumRows, NumCols]=size(Coeff_matrix);
if(rank(Coeff_matrix) == rank([Coeff_matrix Const_matrix]))
 && (NumCols == rank(Coeff_matrix))
    disp('Solution = ');
    disp(inv(Coeff_matrix)*Const_matrix);
elseif(rank(Coeff_matrix) == rank([Coeff_matrix
 Const_matrix])) && (NumCols > rank(Coeff_matrix))
    disp('Infinitely Many Solution');
else
    disp('No solution');
end
```

## Output

```
>> Assignment_3b
Coefficient Matrix =
    -1     3     7
    -2     6    14
     1    -1    -1

Constant Matrix =
     5
    10
    -2
```

```
Infinitely Many Solution
>>
```