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## Contents



## Question 1

```
11 + 31
```

```
ans =

    42
```

## Question 2

```
A = [1 2 3; 2 -1 3; 4 -1 12]
b = [115; 1421; 4214]


A \ b

M = [1, 2, 3, 115; 2, -1, 3, 1421; 4, -1, 12, 4214;]

rref(M)
```

```
A =

     1     2     3
     2    -1     3
     4    -1    12


b =

         115
        1421
        4214


ans =

   54.6667
 -417.1111
```

```
  298.1852


M =

           1           2           3         115
           2          -1           3        1421
           4          -1          12        4214


ans =

    1.0000         0         0   54.6667
         0    1.0000         0 -417.1111
         0         0    1.0000  298.1852
```

## Question 3

```
C = [4 -7 -33; -3 8 44; -3 7 37]
rref(C)
%Part 1
% Solutions are x1 = 4 & x2 = 7. The given system is consistent because the
% last row of the system is redundant as it contains all 0s.

%Part 2
%(i)The conditions are that the leading entries in the RREF should be one &
%they should be the only non-zero entry in their respective column.
%(ii) They should have a unique solution if the system does not have a free
%variable.
%(iii)The last column contains no pivots as its consistent.
```

```
C =

     4    -7   -33
    -3     8    44
    -3     7    37


ans =

     1     0     4
     0     1     7
     0     0     0
```

## Question 4

```
A = [1 2 3; 2 -1 3]
b = [115; 1421]

A \ b
```

```
M = [1 2 3 115; 2 -1 3 1421]
rref(M)

%If a system has more unknowns than equations then there's always a free
%variable, and if a system has a free variable, then it cannot have a
%unique solution

%Vectors v = [591.4 -238.2 0]
%Vectors w = [-1.8 -0.6 1]
```

```
A =

     1     2     3
     2    -1     3


b =

         115
        1421


ans =

         0
 -435.3333
  328.5556


M =

           1           2           3         115
           2          -1           3        1421


ans =

    1.0000         0    1.8000  591.4000
         0    1.0000    0.6000 -238.2000
```

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