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Problem 1

```
A1 = [1 2 3; 0 4 5; 1 0 6];
sol1 = det(A1) * inv(A1) % Finding adjoint matrix
% adjoint(A1)
% ^^ Incorrect syntax as the function DNE, here as reminder for myself
```

```
sol1 =

    24   -12    -2
     5     3    -5
    -4     2     4
```

Problem 2

```
A2 = [1 2; 3 4];
ajdA2 = [4 -3; -2 1]; % Adjoint matrix
invA2 = ajdA2 / det(A2) % Finding inverse
inv(A2); % Check
```

```
invA2 =

   -2.0000    1.5000
    1.0000   -0.5000
```

Problem 3

```
A3 = A1;
cofA3 = [24 5 -4; -12 3 2; -2 -5 4]; % Cofactor matrix
adjA3 = [24 -12 -2; 5 3 -5; -4 2 4]; % Adjoint = Transposed cofactor
% adjA3 = [1 0 1; 2 4 0; 3 5 6]
% ^^ Incorrect calculation, here as a reminder for myself
invA3 = adjA3 / det(A3) % Finding inverse
```

```
inv(A3); % Check
```

```
invA3 =

    1.0909   -0.5455   -0.0909
    0.2273    0.1364   -0.2273
   -0.1818    0.0909    0.1818
```

Problem 4

```
A4 = A2;
I4 = eye(2); % Creating 2x2 identity matrix
aug4 = [A4, I4]; % Concatenating A4 and I4
rref4 = rref(aug4) % Finding inverse of A4 using RREF
inv(A4); % Check
```

```
rref4 =

    1.0000         0   -2.0000    1.0000
         0    1.0000    1.5000   -0.5000
```

Problem 5

```
A5 = [4 3; 3 2];
invA5 = inv(A5); % Inverse matrix
sol5 = A5 * invA5 % Showing equality
invA5 * A5 % Showing equality
```

```
sol5 =

     1     0
     0     1
```

```
ans =

     1     0
     0     1
```

Problem 6

```
[z, a, y, b, x, c, w, d] = deal(0); % setting all variable letters = 0
y = 10; % for part d later overwriting above
c = 11; % for part d later overwriting above
B6 = [z a 1 4; y b 2 3; x c 3 2; w d 4 1];
%{
```

```
part a: The diragonal elements of B are z [1, 1], b [2, 2], 3 [3, 3],
1 [4, 4]. The nondiagonal elements of B are the rest of the values in
 the
matrix a, 1, 4, y, 2, 3, x, c, 2, w, d, and 4.
%}
B6T = transpose(B6) % part b: Transpose of B
B6TT = transpose(B6T) % part c: Transpose of B'
%{
part d:
B21 = y; in the transposed matrix, B', y is at B'(1, 2)
B32 = c; in the transposed matrix, B', c is at B'(2, 3)
B44 = 1, in the transposed matrix, B', 1 is at B'(4, 4), the same
 position
The transposed matrix is a row and column exchangin
B(1, 3) becomes B'(3, 1) as the checks below would show
%}
B621 = B6(2, 1); % y in B
B6T12 = B6T(1, 2); % y in B'
B632 = B6(3, 2); % c in B
B6T23 = B6T(2, 3); % c ion B'
B644 = B6(4, 4); % 1 in B
B6T44 = B6T(4, 4); % 1 in B'
```

```
B6T =

     0    10     0     0
     0     0    11     0
     1     2     3     4
     4     3     2     1


B6TT =

     0     0     1     4
    10     0     2     3
     0    11     3     2
     0     0     4     1
```

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