Pset3b

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```
# 1

(A <- matrix(c(1, 4, 5, 6, 9, 12, 4, 1, 9), nrow = 3,
    ncol = 3, byrow = TRUE))
```

```
     [,1] [,2] [,3]
[1,]    1    4    5
[2,]    6    9   12
[3,]    4    1    9
```

```
(B <- matrix(c(1, 2, 8, 9, 3, 8, 2, 2, 0), nrow = 3,
    byrow = TRUE))
```

```
     [,1] [,2] [,3]
[1,]    1    2    8
[2,]    9    3    8
[3,]    2    2    0
```

```
(C <- matrix(c(8, 9, 10, 4, 7, 9), nrow = 2, byrow = TRUE))
```

```
     [,1] [,2] [,3]
[1,]    8    9   10
[2,]    4    7    9
```

```
# 2
(AplusB <- A + B)
```

```
     [,1] [,2] [,3]
[1,]    2    6   13
[2,]   15   12   20
[3,]    6    3    9
```

```r
(CplusB <- NA)  # Matrix C and B are not comformable
```

```
[1] NA
```

```r
(AxB <- A %*% B)
```

```
     [,1] [,2] [,3]
[1,]   47   24   40
[2,]  111   63  120
[3,]   31   29   40
```

```r
(Ainv <- solve(A))
```

```
            [,1]       [,2]        [,3]
[1,] -0.65714286  0.2952381 -0.02857143
[2,]  0.05714286  0.1047619 -0.17142857
[3,]  0.28571429 -0.1428571  0.14285714
```

```r
(AtxAinv <- solve(t(A) %*% A))
```

```
             [,1]         [,2]        [,3]
[1,]  0.519818594 -0.001723356 -0.23401361
[2,] -0.001723356  0.043628118 -0.02312925
[3,] -0.234013605 -0.023129252  0.12244898
```

```r
# 3
(coef.matrix <- matrix(c(3, 5, 2, 1, 5, 5, 3, 3, 9,
    -1, 0, 2, 2, 2, -5, -4), nrow = 4, byrow = TRUE))
```

```
     [,1] [,2] [,3] [,4]
[1,]    3    5    2    1
[2,]    5    5    3    3
[3,]    9   -1    0    2
[4,]    2    2   -5   -4
```

```r
(Y <- matrix(c(1, -1, 3, 4), nrow = 4))
```

```
     [,1]
[1,]    1
[2,]   -1
[3,]    3
[4,]    4
```

```
(solution <- solve(coef.matrix) %*% Y)
```

```
           [,1]
[1,]  0.8695652
[2,] -0.3913043
[3,]  1.4782609
[4,] -2.6086957
```

```
# final answers a, b, c, d
```