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65-764-0379
Section 1
1.
MixColumns(state):
    for each column in the state matrix
        # matrix multiplication for this function defines addition as XOR and mul
tiplication as ffMultiply

        the first item in the column i is equal to the column matrix multiplied b
y the top row of the fixed matrix
        second item is equal to column matrix multiplied by the second row
        third "                                                  " third row
        fourth "                                                 " fourth row
    return state

2.
xtime(byte):
    do a left bitshift by one on byte to drop high bit
    if the high bit is one
        return byte ^ 0x1b
    else:
        return byte

uint8_t ffMultiply(uint8_t a,uint8_t b):
    answer = 0
    for right shift b
        and the bit that fell off with 1
        if it's equal to 1 then answer = answer ^ a
        a = xtime(a)
    return answer
```