Given the following C code:

```
void initialize(double **p) {
  for (int i = 0; i < 5; i++)
    *(p + i) = new double[ i + 1 ];
}

int main() {
  double *p[10];
  initialize(p + 3);
  release(p);
}
```

a) How many bytes are allocated at each line of main( ) ?
b) How memory are allocated by initialize( ) function in main( ) ?
c) Write release() function to avoid memory leak.

Solve:

a) `10 * sizeof(double) bytes`

`Initialize(p + 3):` Do not allocate memory directly in the main function.

b) Initialize function allocates dynamic memory for pointer starting from `p[3]`.
Initialize function:
- `*(p + i) = p[3 + i]` (allocate from `p[3]` to `p[7]`)
- `new double[i + 1]`: allocates dynamic array with `i + 1` elements of type `double`

The total memory allocated is `(1 + 2 + 3 + 4 + 5) * sizeof(double) = 15 * sizeof(double)`

c)
```
void release(double *p[10]) {
  for (int i = 0; i < 10; ++i)
    if (p[i] != NULL) {
      delete [] p[i];
      p[i] = NULL;
    }

}
```