**1.1)**

1. 14
2. 0
3. [0 1 2]

**1.2)**

1. True
2. True
3. True
4. False
5. False
6. True
7. False
8. True
9. True

**1.3)**

1. A square matrix equal to its transpose
2. A square matrix with a diagonal row of 1’s (top left to bottom right) and 0’s everywhere else
3. A square matrix where the transpose is equal to its inverse

**2.1)**

1. 4$
2. 0.55

**2.2)**

1. 0.010094
2. False positive
3. 0.0094115
4. Yes. Since most tests are false positives, it follows that there is a low probability that a person is a drug user given a positive test result
5. Increasing the true negative rate, P(T = 0 | D = 0) will have the largest impact on the test due to specificity.

**3.1)**



**3.2)**



**3.2)**

See /code/grads.py

**4.1)**

**4.2)**

1. O(n lg n)
2. O(n)
3. O(n)
4. O(n · d)

**4.3)**

1. func1 → O(n)
2. func2 → O(n)
3. func3 → O(1)
4. func4 → O()