1. What functionality and advantages does the NumPy module provide?

2. What functionality and advantages does the pandas module provide?

3. Assume that $a = np.array([1, 2, 3])$ and $b = np.array([4, 5, 6])$ after `import numpy as np`. Evaluate each of the following expressions and fill in the blank with the resulting value. Make sure to distinguish between a result that is a scalar value (a single number) vs a vector (a list of values) by enclosing lists in `[ ]`.
   
   - $\text{np.sum}(b - a)$
   - $\text{np.power}(a - b, 2)$
   - $b - 3 \ast a + 2$
   - $a \ast \text{np.mean}(b)$

4. [4 points] Rewrite the following code into “plain” Python that does not use NumPy, assuming $a$ and $b$ are lists of the same length. If the function below returns a vector, your function should return a list. Built-in functions like `sum`, etc., and the math module are considered “plain” Python.

   ```python
   def mystery(a):
       return np.sqrt(1 + np.power(a, 2))
   ```