1 Python 101: Homework

1.1 By Evelyn J. Boettcher

1.2 Week 3 Lesson 2: Solving Equations

1.3 Solving Linear equations

Solve the following with numpy.

Find the two angles. ### Problem 1

a + b = 180 b = 5x - 22 b = 8x + 46

1.3.1 Problem 2

a + b = 180 a = 2x+1 b = 3x-31

1.3.2 Problem 3

What is the difference between .dot() and @ in python's numpy math functions

1.3.3 Problem 4

Read 15.4 General Linear Least Squares from chapter 15 of Numerical˙recipes˙chap15.pdf Numerical Recipes in C * with focus on Solution by Use of Singular Value Decomposition

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1.4 Solution

1.4.1 problem 1

```
import numpy as np
A = np.array([[1, 1, 0 ], # NOT I need to Re-write the equation to be Ax=B format
              [1, 0, - 5],
               [0, 1, -8]])
B = np.array([180, -22,46])
x = np.linalg.solve(A, B)
print("angle_a = %0.1f, angle_b = %0.1f and x = %0.1f" %  tuple(x))

# Or we could do.

x = np.linalg.inv(A) @ B
print("angle_a = %0.1f, angle_b = %0.1f and x = %0.1f" %  tuple(x))
```

1.4.2 problem 2

```
import numpy as np
A = np.array([[1, 1, 0 ], # NOT I need to Re-write the equation to be Ax=B format
              [1, 0, - 2],
              [0, 1, -3]])
```

```
B = np.array([180, 1, -31])
x = np.linalg.solve(A, B)
print("angle_a = %0.1f, angle_b = %0.1f and x = %0.1f" %  tuple(x))

# Or we could do.

x = np.linalg.inv(A) @ B
print("angle_a = %0.1f, angle_b = %0.1f and x = %0.1f" %  tuple(x))
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1.4.3 Problem 4

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