Assignment 2

The due date for submitting this assignment has passed.

Due on 2021-02-07, 23:59 IST.

As per our records you have not submitted this assignment.

1) Which of the following creates an empty class? *1 point*

```
class Records:
```

```
class Records:
  pass
```

```
class Records:
  return
```

We cannot create an empty class

No, the answer is incorrect.
Score: 0
Accepted Answers:
```
class Records:
  pass
```

2) What are the methods that begin and end with two underscores (__) in classes called? *1 point*

- In-built methods
- Additional methods
- Special methods
- User-defined methods

No, the answer is incorrect.
Score: 0
Accepted Answers:
Special methods

3) What is the product of reciprocals of the array $[2., -1., 3., 1., 5., 6.]$ *1 point*

- 1.2000000000000034
- -0.0055555555555555555
- -0.3722222222222222
- None of these

No, the answer is incorrect.
Score: 0
Accepted Answers:
-0.0055555555555555

4) What is the orthogonal projection of vector $[-14, 10, 7]$ onto the vector $[12, -20, 13]$? *1 point*

$[-4.66199158, 7.76998597, -5.05049088]$

$[11.24057971, -8.02889551, -5.62028986]$

$[-1.73015873, -8.65079365, 17.3015873]$

$[15.96774194, -18.42431762, 3.68486352]$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$[-4.66199158, 7.76998597, -5.05049088]$

5) What is the volume of the parallelepiped formed by the vectors $u = [-2, 0, 1]$, $v = [3, 1, -3]$ and $w = [-2, -2, 1]$? *1 point*

- 6
- -6
- 18.547
- -18.547

No, the answer is incorrect.
Score: 0
Accepted Answers:
6

6) Which of these following statements is true? *1 point*

The function `arange` in numpy is the same as the in-built function `range`, and allows you to only have a list of integer values as the output.

You can choose to include the endpoints in both `arange` as well as `linspace`, both of which, are functions found in numpy

The function `linspace` from numpy allows you to choose the number of elements you want between the start and the end points, and you can choose to include the end-point in the output as well.

Considering that numpy has been imported as np, the commands `np.arange(0,1)` and `np.linspace(0,1)` produce the same output.

No, the answer is incorrect.
Score: 0
Accepted Answers:
The function `linspace` from numpy allows you to choose the number of elements you want between the start and the end points, and you can choose to include the end-point in the output as well.

7) Which of these following functions can be used from NumPy to replace elements in an array satisfying some property, by other elements? *1 point*

- append
- where
- choose
- reshape

No, the answer is incorrect.
Score: 0
Accepted Answers:
where

8) Choose the correct option: *1 point*

- Lists consume lesser memory than NumPy arrays
- Both Lists and NumPy arrays are homogeneous, meaning, the data inside them must have a uniform DataType
- NumPy arrays consume lesser memory than lists
- It is easier to perform element-wise mathematical operations on Lists than on NumPy Arrays

No, the answer is incorrect.
Score: 0
Accepted Answers:
NumPy arrays consume lesser memory than lists

9) Consider the following set of points : *1 point*

$$\{(-7.0, 7.0), (-1.0, 9.0), (-3.0, 12.0), (-5.0, 12.0), (6.0, 3.0), (-2.0, 10.0), (3.0, 7.0), (2.0, 11.0), (-10.0, 15.0), (-10.0, 0.0)\}$$

Using `curve_fit` from `scipy.optimize`, suppose we fit these points to a curve $f(x) = ax^2 + bx + c$. Then what are coefficients a, b, c?

- 0.03037253, 0.23503605, -1.4187152
- 0.03037253,-1.4187152, 0.23503605
- -0.0852866, -0.55035376, 9.98820314
- -0.55035376, 9.98820314, -0.0852866

No, the answer is incorrect.
Score: 0
Accepted Answers:
-0.0852866, -0.55035376, 9.98820314

10) Consider the following code *1 point*

```
class Test_Class:
    def __init__(self):
        self.mark = 100
        self.__avg = 75

    def __getY(self):
        return self.__avg

val = Test_Class()
```

How do you delete the variable **mark** and access the value of the private variable **age**?

```
del Test_Class.mark, val.avg
```

```
delete val.mark, val.getY()
```

```
delete Test_Class.mark, val._Test_Class__getY()
```

```
del val.mark, val._Test_Class__avg
```

No, the answer is incorrect.
Score: 0
Accepted Answers:
```
del val.mark, val._Test_Class__avg
```

11) Consider the array: [-2, -7, 2, 1, 4, 1, 7, 8, 1]. What is the natural log of the sum of exponential of each term of the array. *1 point*

- 8.56496131463829
- 3.7197154366622316
- 2.7197154366622316
- 6.262376221644246

No, the answer is incorrect.
Score: 0
Accepted Answers:
8.56496131463829

12) Find the sum of squares of the roots of the polynomial $f(x) = x^5 - 2x^4 + x^3 + 3x^2 - 4x + 17$. You may use the `roots` function from NumPy to compute the roots of the polynomial *1 point*

- 6
- 2
- 4
- 5

No, the answer is incorrect.
Score: 0
Accepted Answers:
2

13) Suppose $(x_1, y_1), (x_2, y_2), (x_3, y_3)$ and (x_4, y_4) are four different sets of data that need to be plotted simultaneously on the same plot. Which of the following is the correct method of execution? (The module `matplotlib.pyplot` has been imported as plt) *0 points*

```
plt.plot(x1,y1)+plt.plot(x2,y2)+plt.plot(x3,y3)+plt.plot(x4,y4)
plt.show()
```

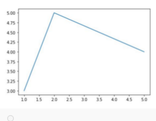
```
plt.plot([x1,y1],[x2,y2],[x3,y3],[x4,y4])
plt.show()
```

```
plt.plot(x1,y1,x2,y2,x3,y3,x4,y4)
plt.show()
```

```
plt.plot((x1,y1),(x2,y2),(x3,y3),(x4,y4))
plt.show()
```

No, the answer is incorrect.
Score: 0
Accepted Answers:
```
plt.plot(x1,y1,x2,y2,x3,y3,x4,y4)
plt.show()
```

14) Looking at the given figure, identify the code used to create it *0 points*




```
import matplotlib.pyplot as plt
plt.plot([1,2,5],[3,5,4])
plt.show()
```

```
import matplotlib.pyplot as plt
plt.plot([[1,2],[3,5]],[[2,5],[5,4]])
plt.show()
```

```
import matplotlib.pyplot as plt
plt.plot((1,2,5),(3,5,4))
plt.show()
```

```
import matplotlib.pyplot as plt
plt.plot([1,3],[2,5],[5,4])
plt.show()
```

No, the answer is incorrect.
Score: 0
Accepted Answers:
```
import matplotlib.pyplot as plt
plt.plot([1,2,5],[3,5,4])
plt.show()
```

15) Consider the given table and answer the question that follows. *1 point*

Name	Age	Average marks
John	20	95.5
Sarah	21	94.3
Ankit	22	94.5
Ron	23	96.4
Marie	20	95
Ray	21	95.1

What plot should be used to visualize the relationship between Name and Age? What plot should be used to visualize the probability distribution of Average marks?

- Histogram, bar plot
- Scatter plot, bar plot
- Bar plot, histogram
- Pie chart, line plot

No, the answer is incorrect.
Score: 0
Accepted Answers:
Bar plot, histogram