SIMPLE PYTHON PROGRAMS TO WORK:

1. A simple program that displays "Hello, World!"

```
# This program prints Hello, world!

print('Hello, world!')
```

Output

```
Hello, world!
```

In this program, we have used the built-in `print()` function to print the string

2. Adding two numbers in python

```
# Python3 program to add two numbers
num1 = 15
num2 = 12

# Adding two nos
sum = num1 + num2

# printing values
print("Sum of", num1, "and", num2 , "is", sum)
```

Output:

```
Sum of 15 and 12 is 27
```

3. Write a Python program to convert degrees to radians.

```
pi=22/7
degree = float(input("Input degrees: "))
radian = degree*(pi/180)
print(radian)
```

Output:

```
Input degrees: 90
1.5714285714285714
```

4. Write a Python program to calculate the arc length of an angle.
   Explanation: In a planar geometry, an angle is the figure formed by two rays, called the sides of the angle, sharing a common endpoint, called the vertex of the angle. Angles formed by two rays lie in a plane, but this plane does not have to be a Euclidean plane.

```python
def arclength():
    pi=22/7
    diameter = float(input('Diameter of circle: '))
    angle = float(input('angle measure: '))
    if angle >= 360:
        print("Angle is not possible")
        return
    arc_length = (pi*diameter) * (angle/360)
    print("Arc Length is: ", arc_length)


arclength()
```

Output:

```
Diameter of circle: 9
angle measure: 45
Arc Length is:  3.5357142857142856
```

5. Write a Python program to calculate the discriminant value.
   Explanation : The discriminant is the name given to the expression that appears under the square root (radical) sign in the quadratic formula.

```python
def discriminant():
    x_value = float(input('The x value: '))
    y_value = float(input('The y value: '))
    z_value = float(input('The z value: '))
    discriminant = (y_value**2) - (4*x_value*z_value)
    if discriminant > 0:
        print('Two Solutions. Discriminant value is:', discriminant)
    elif discriminant == 0:
        print('One Solution. Discriminant value is:', discriminant)
    elif discriminant < 0:
        print('No Real Solutions. Discriminant value is:', discriminant)


discriminant()
```

Output:

```
The x value: 4
The y value: 8
The z value: 2
Two Solutions. Discriminant value is: 32.0
```