Exercise 3

3.1

```
c = [1,2,3]
x = [0, 2, 4, 8]

p = [c[0] + c[1]* x[i] + c[2] * x[i] **2 for i in range(len(x)) ]

print(p)
```

```
[1, 17, 57, 209]
```

3.2

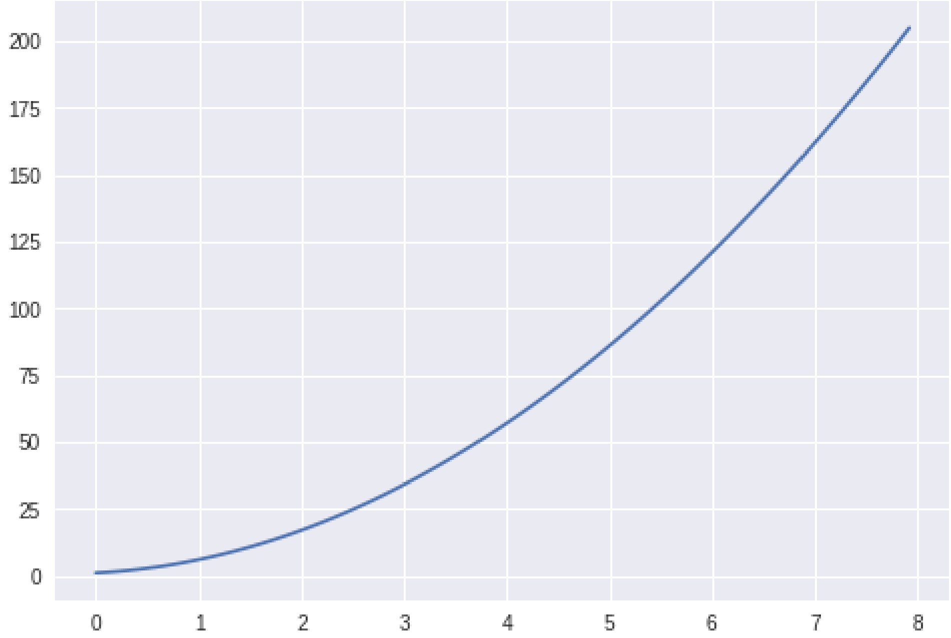
```
import matplotlib.pyplot as plt

c = [1,2,3]
x = [8 * i / 100 for i in range(0,100)]


y = [c[0] + c[1]* x[i] + c[2] * x[i] **2 for i in range(len(x)) ]


plt.plot(x,y)
```

```
[<matplotlib.lines.Line2D at 0x7f2b4b3900b8>]
```



3.3

```
upperstr = 'thepurposeoflife'

upperstr = [letter.upper() if letter == 'e' else letter for letter in upperstr ]
print(''.join(upperstr))
```

```
thEpurposEoflifE
```

3.4

```
def showrecords(records):
  for var in records:
    print('%s and %d and %s' % (var[0], var[1], var[2]))


records = (('Sam', 19, 'CS'),
('Nicole', 21, 'Biochemistry'),
('Paul', 20, 'Fine Arts'),
('Ashley', 18, 'History'))

showrecords(records)
```

```
Sam and 19 and CS
Nicole and 21 and Biochemistry
Paul and 20 and Fine Arts
Ashley and 18 and History
```

3.5

```
def multiplier_of(n):
  def multiplier(num):
    return n * num
  return multiplier

multiply_with_5 = multiplier_of(5)
print(multiply_with_5(9))

multiply_with_45 = multiplier_of(multiply_with_5(9))
print(multiply_with_45(2))
```

```
45
90
```

3.6

```
def type_check(correct_type):
    def check(old_function):
      def fun(arg):
        if(isinstance(arg,correct_type)):
          return old_function (arg)
        else:
          print ('Bad Type')
      return fun
    return check

@type_check(int)
def times2(num):
    return num*2

print(times2(2))
times2('Not A Number')

@type_check(str)
def first_letter(word):
    return word[0]

print(first_letter('Hello World'))
first_letter(['Not', 'A', 'String'])
```

4

3.7

```
import random
PLUGINS = dict()

def register(func):
    PLUGINS[func.__name__] = func



@register
def say_hello(name):
    return f"Hello {name}"

@register
def be_awesome(name):
    return f"Yo {name}, together we are the awesomest!"

def randomly_greet(name):
    greeter, greeter_func = random.choice(list(PLUGINS.items()))
    print(f"Using {greeter!r}")
    return greeter_func(name)

randomly_greet('John')
```

```
Using 'say_hello'
'Hello John'
```

Double-click (or enter) to edit