assignment6

March 6, 2022

```python
[4]: import numpy as np
```

```python
[5]: import skfuzzy as fuz
```

```python
[6]: import matplotlib.pyplot as plt
```

```python
[17]: x = np.linspace(start = 0, stop = 75, num = 75, endpoint = True, retstep =␣
      ↪False)
      al = [0, 25, 50]
      bl = [25, 50, 75]
```

```python
[18]: young = fuz.membership.trimf(x, al)
```

```python
[19]: middle = fuz.membership.trimf(x, bl)
```

```python
[20]: one = np.ones(75)
```

```python
[21]: zeros = np.zeros((75, ))
```

```python
[23]: union = fuz.fuzzy_or(x, young, x, middle) [1]
```

```python
[24]: intersection = fuz.fuzzy_and(x, young, x, middle) [1]
```

```python
[25]: complement = fuz.fuzzy_not(young)
```

```python
[27]: plt.figure()
      plt.plot(x, young)
```
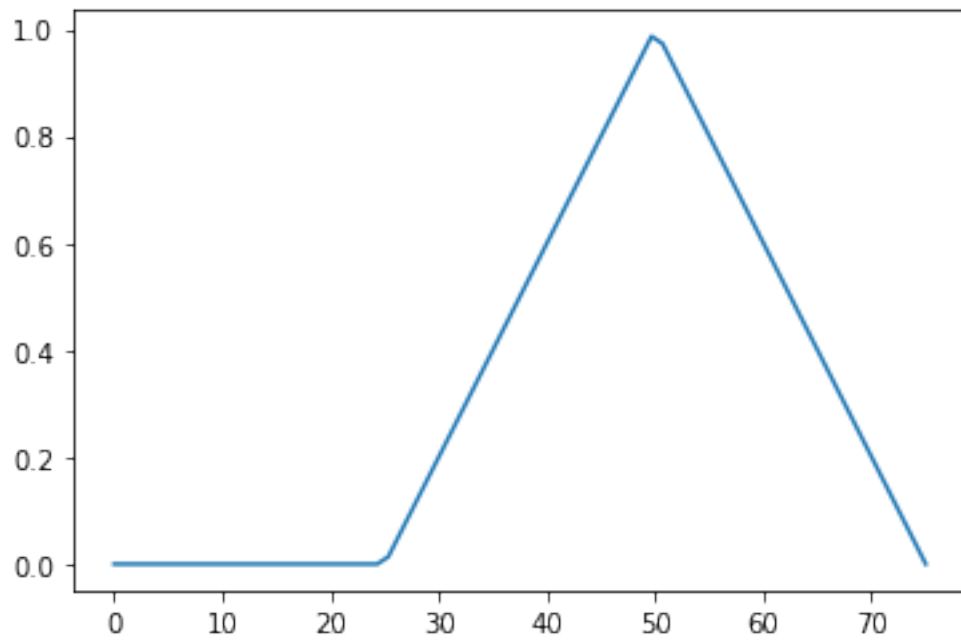
```
[27]: [<matplotlib.lines.Line2D at 0x12e80590490>]
```
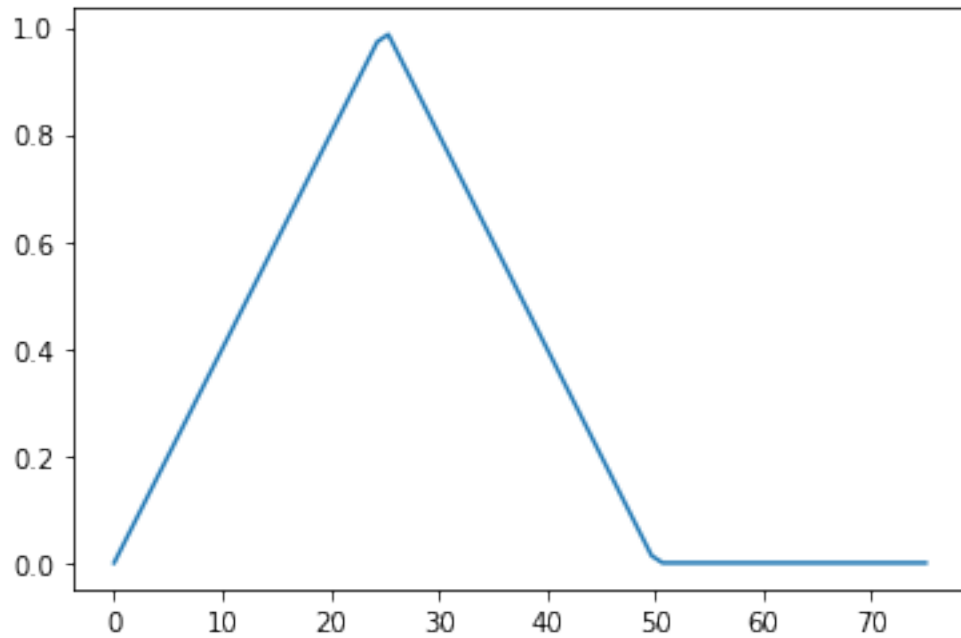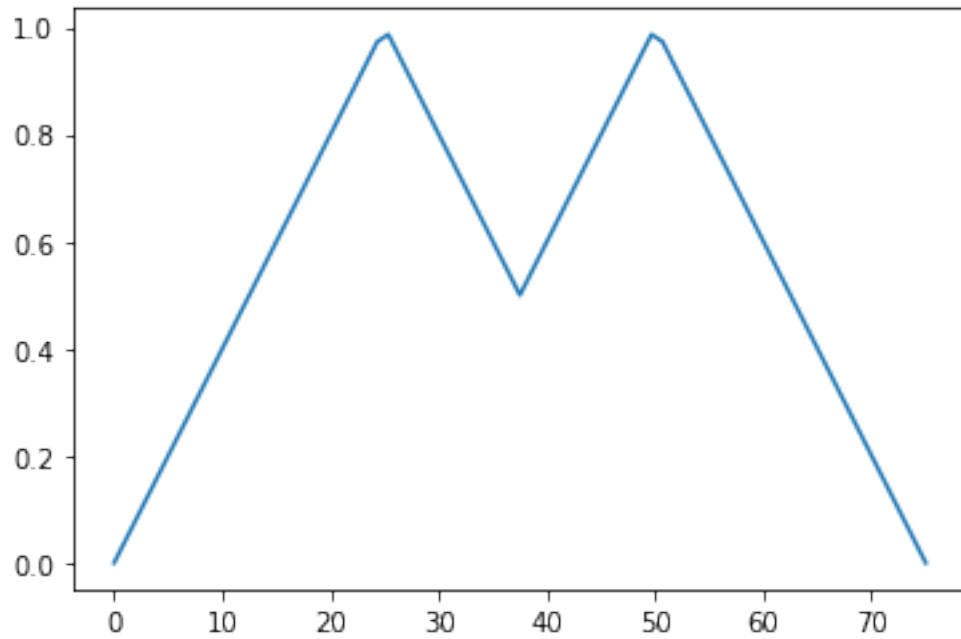
```
[28]: plt.figure()
      plt.plot(x, middle)
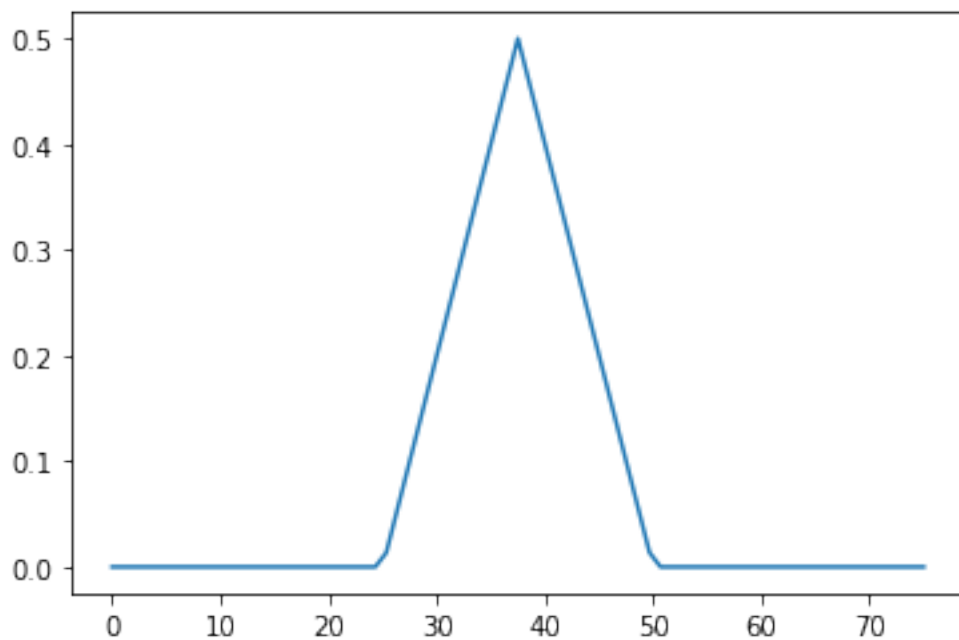```

[28]: [<matplotlib.lines.Line2D at 0x12e80d4c1f0>]

```
[29]: plt.figure()
      plt.plot(x, union)
```
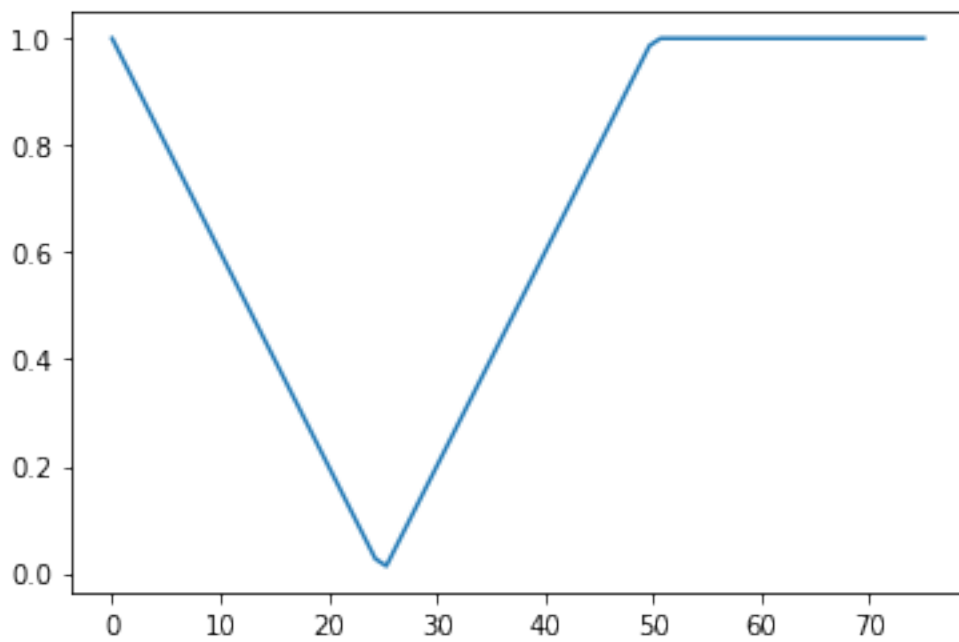
[29]: [<matplotlib.lines.Line2D at 0x12e80db2940>]



```
[30]: plt.figure()
      plt.plot(x, intersection)
```

[30]: [<matplotlib.lines.Line2D at 0x12e80e1abb0>]

```
[31]: plt.figure()
      plt.plot(x, complement)
```

[31]: [<matplotlib.lines.Line2D at 0x12e80e87be0>]

```
[62]: x = np.linspace(start = 0, stop = 75, num = 75, endpoint = True, retstep =␣
      →False)
      b1 = 0.5
      c1 = 0.7
      b2 = 0.5
      c2 = 0.3
      a = 0.3
      b = 0.6
      c = 0.7
      d = 1.3
```

```
[63]: diff = fuz.membership.dsigmf(x, b1, c1, b2, c2)
```

```
[64]: prod = fuz.membership.psigmf(x, b1,c1, b2, c2)
```

```
[65]: bell = fuz.membership.gbellmf(x, a, b, c)
```

```
[66]: pi = fuz.membership.pimf(x, a, b, c, d)
```
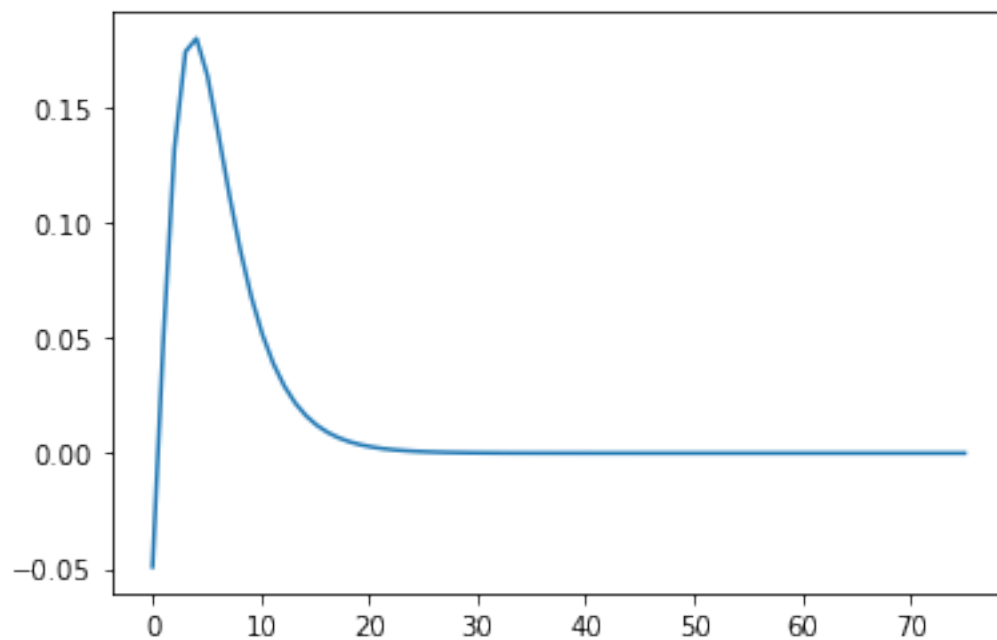
```
[67]: basic = fuz.membership.sigmf(x, b, c)
```

```
[68]: s = fuz.membership.smf(x, a, b)
```

```
[69]: z = fuz.membership.zmf(x, a, b)
```
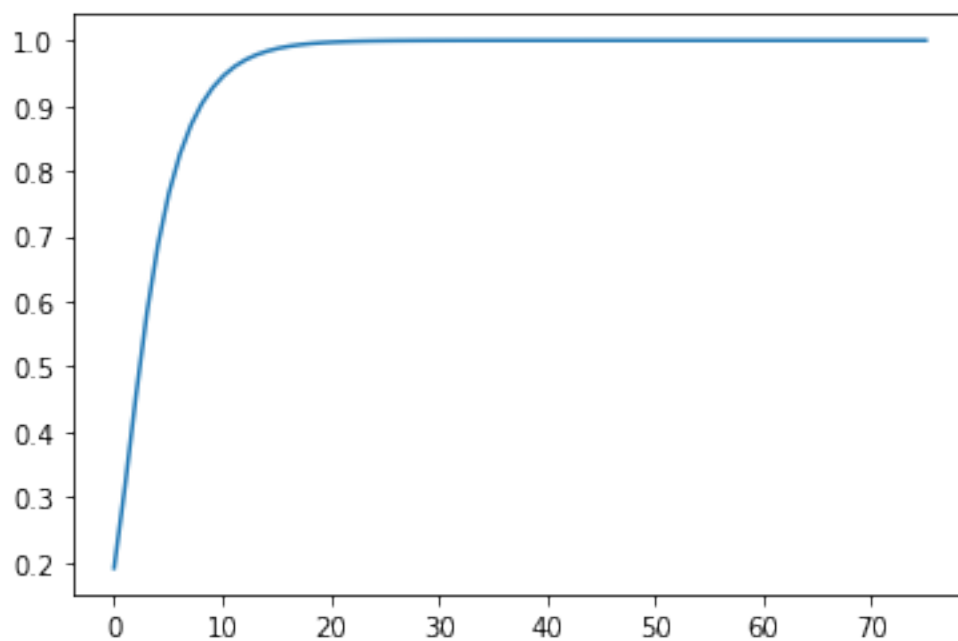
```
[70]: plt.figure()
      plt.plot(x, diff)
```
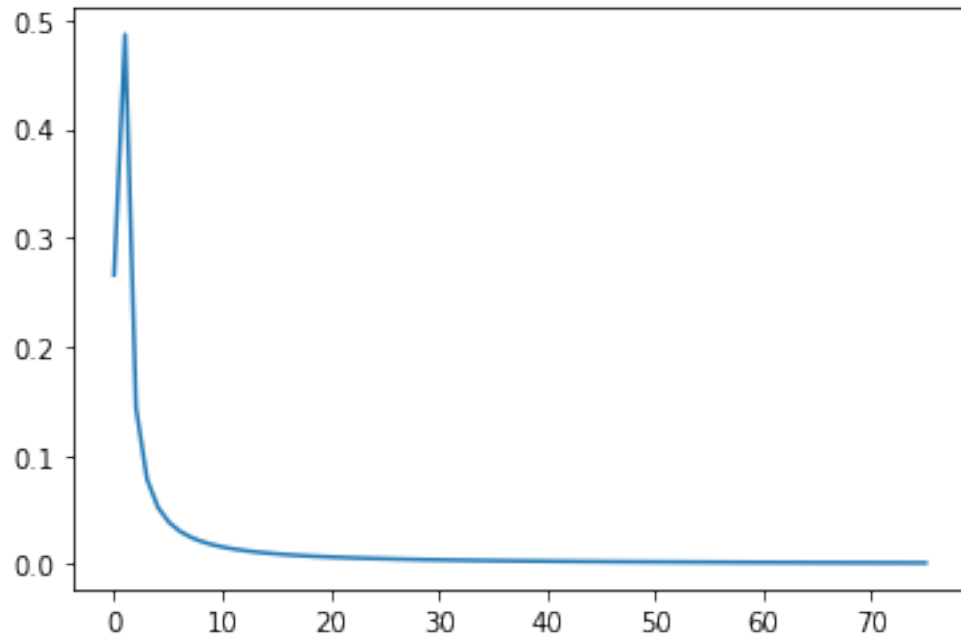
```
[70]: [<matplotlib.lines.Line2D at 0x12e820ecb20>]
```

```
[71]: plt.figure()
      plt.plot(x, prod)
```
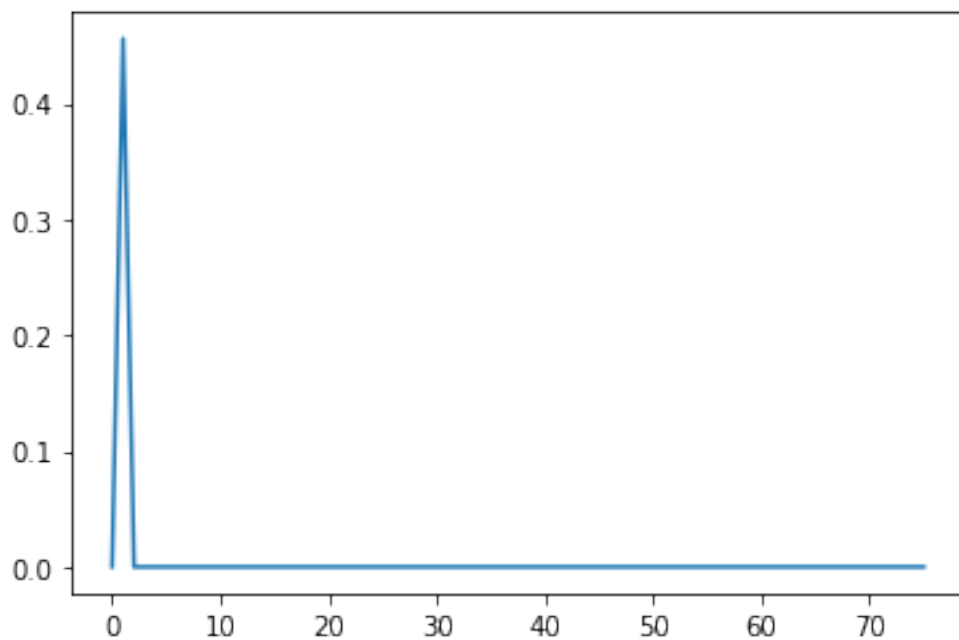
[71]: [<matplotlib.lines.Line2D at 0x12e82159610>]

```
[72]: plt.figure()
      plt.plot(x, bell)
```
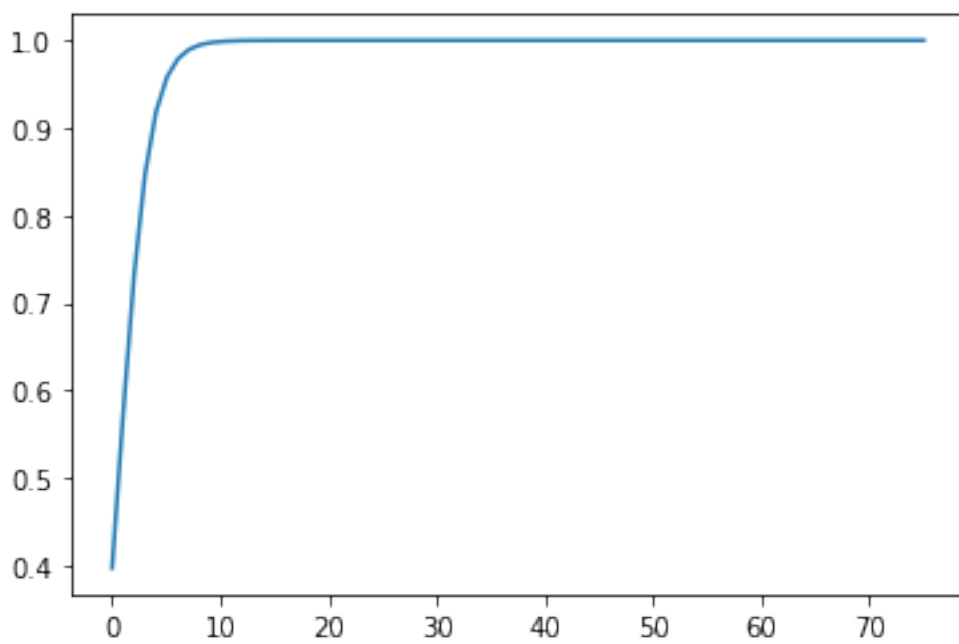
[72]: [<matplotlib.lines.Line2D at 0x12e821c9790>]


```
[73]: plt.figure()
      plt.plot(x, pi)
```

[73]: [<matplotlib.lines.Line2D at 0x12e822311f0>]

```
[74]: plt.figure()
      plt.plot(x, basic)
```

[74]: [<matplotlib.lines.Line2D at 0x12e82284d90>]

[ ]: