1_SVG_converter_Copper

January 16, 2021

```
In [5]: import numpy as np
        import matplotlib.pyplot as plt

        from svg.path import parse_path
        from svg.path.path import Line
        from xml.dom import minidom

        def line_splitter(start, end):
            return (lambda t: (1-t)*start+t*end)

        def cubic_bezier_converter(start, control1, control2, end):
            original_data = np.array([start, control1, control2, end])
            cubic_bezier_matrix = np.array([
                [-1,  3, -3,  1],
                [ 3, -6,  3,  0],
                [-3,  3,  0,  0],
                [ 1,  0,  0,  0]
            ])
            return_data = cubic_bezier_matrix.dot(original_data)

            return (lambda t: np.array([t**3, t**2, t, 1]).dot(return_data))

        # Learned from
        # https://stackoverflow.com/questions/36971363/how-to-interpolate-svg-path-into-a-pixe


        doc = minidom.parse('LaneMap2.svg')
        path_strings = [path.getAttribute('d') for path
                        in doc.getElementsByTagName('path')]
        doc.unlink()

        points_np_all=[]
        points_np_all=np.empty((len(path_strings)),dtype=object)
        print(len(points_np_all))
        #points_np_all[k]=np.array([])

        for k in range(len(path_strings)):
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#for path_string in path_strings:
    path = parse_path(path_strings[k])
    points_np_merge=np.empty((0,2), float)
    #points_np_merge=np.empty(points_np_merge)
    for dat in path:

#path=parse_path(path_strings[block])

#dat=path[key]

        if type(dat).__name__=='CubicBezier':
            start_np = np.array([dat.start.real, dat.start.imag])
            control1_np = np.array([dat.control1.real, dat.control1.imag])
            control2_np = np.array([dat.control2.real, dat.control2.imag])
            end_np = np.array([dat.end.real, dat.end.imag])
            converted_curve = cubic_bezier_converter(start_np, control1_np, control2_n
            #
            diff_np=start_np-end_np
            n_dots=np.round(np.linalg.norm(diff_np))
            #
            points_np = np.array([converted_curve(t) for t in np.linspace(0, 1, n_dots
        elif type(dat).__name__=='Line':
            start_np = np.array([dat.start.real, dat.start.imag])
            end_np = np.array([dat.end.real, dat.end.imag])
            converted_line = line_splitter(start_np,end_np)
            #
            diff_np=start_np-end_np
            n_dots=np.round(np.linalg.norm(diff_np))
            #
            points_np=np.array([converted_line(t) for t in np.linspace(0, 1, n_dots)])
        elif type(dat).__name__=='Move':
            #
            n_dots=1
            #
            start_np = np.array([dat.start.real, dat.start.imag])
            end_np = np.array([dat.end.real, dat.end.imag])
            points_np = np.array([start_np,end_np])
        else:
            points_np=np.array([])
        #points_np_merge=np.concatenate(points_np_merge,points_np)
        points_np_merge=np.append(points_np_merge, points_np, axis=0)
#         if k==0:
#             points_np_merge=points_np
#         else:
#             points_np_merge=np.append(points_np_merge,points_np,axis=0)
        plt.plot(points_np[:, 0], points_np[:, 1], '.-')
        plt.show()
        print(len(points_np))
        print(len(points_np_merge))
    #points_np_all1=points_np_all1.append(points_np_merge)
    #points_np_all=points_np_merge
    points_np_all[k]= points_np_merge
#     points_np_all=points_np_all.append(points_np_merge)
    print(len(points_np_all))
    plt.plot(points_np_merge[:, 0], points_np_merge[:, 1], '.-')
    plt.show()
```

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len(points_np_all)
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4
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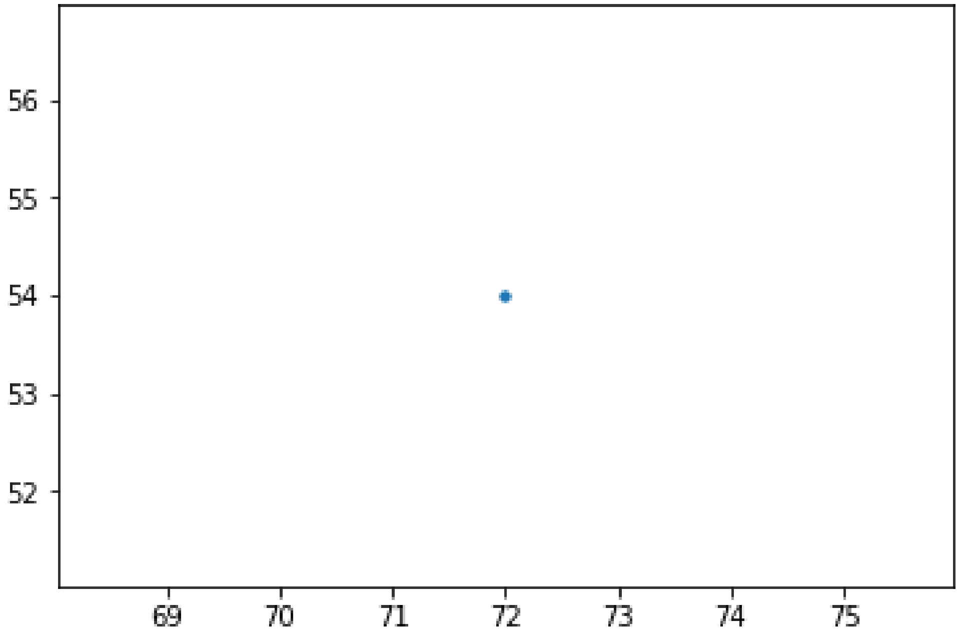

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2
2
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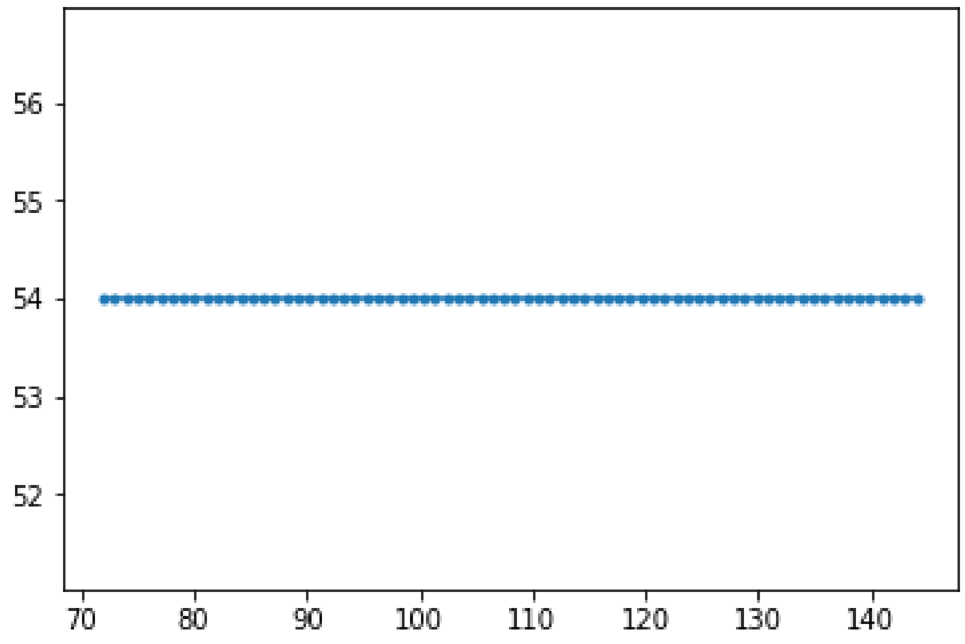
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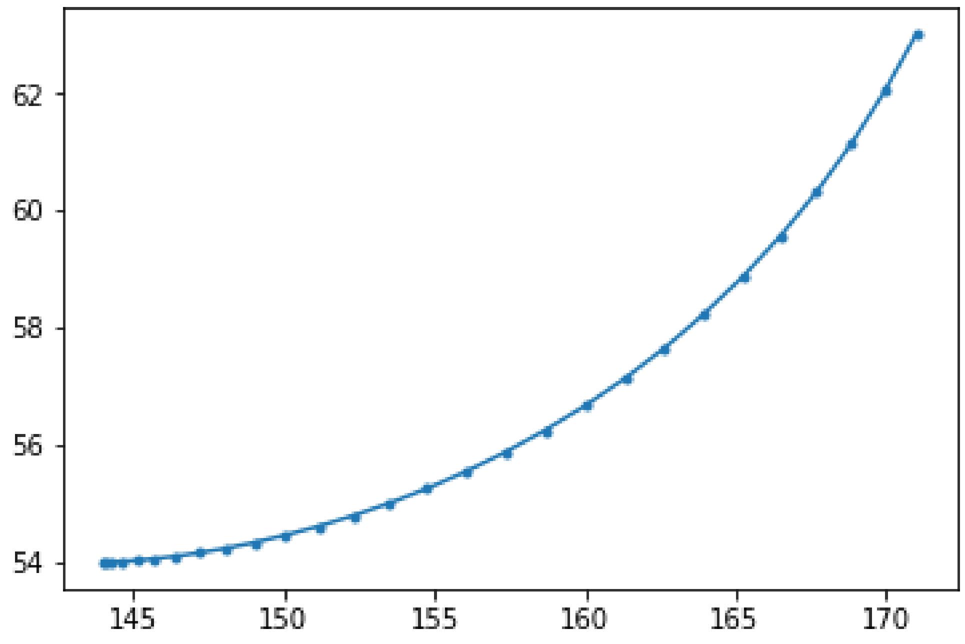
130
140

72
74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170

28
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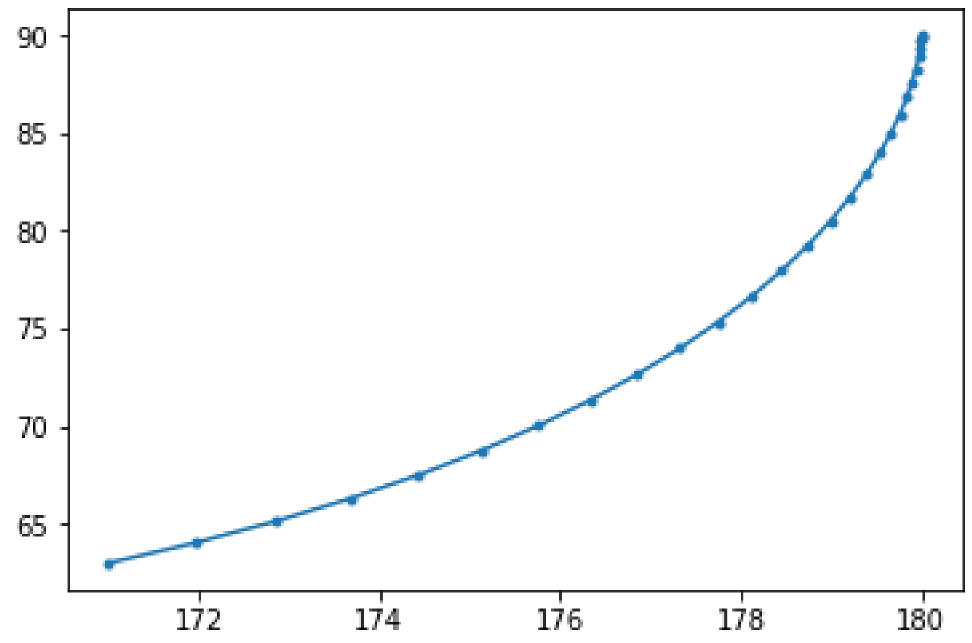

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28
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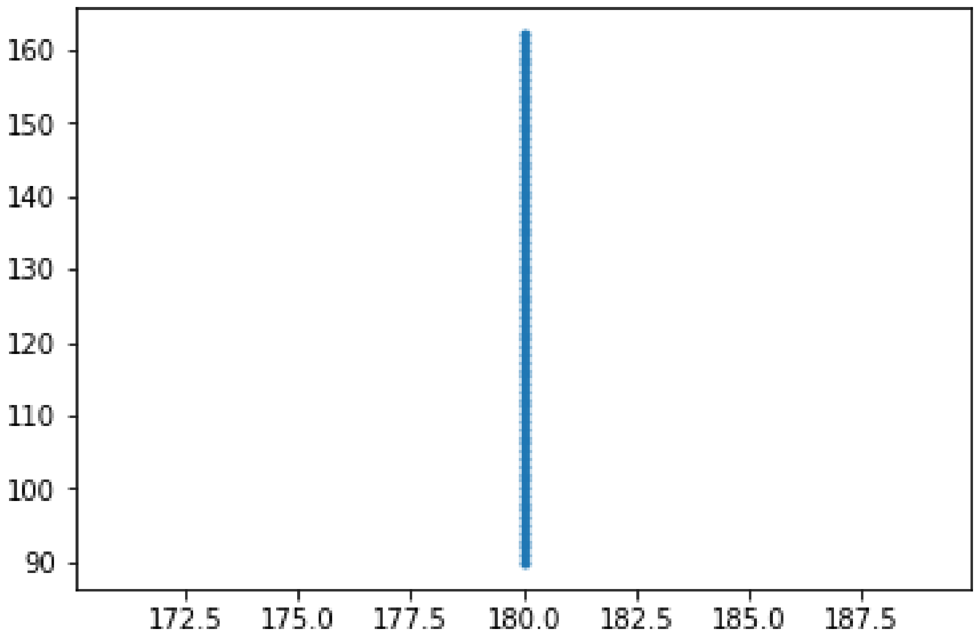

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150
140
130
120
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100
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172.5
175.0
177.5
180.0
182.5
185.0
187.5

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72
202
4
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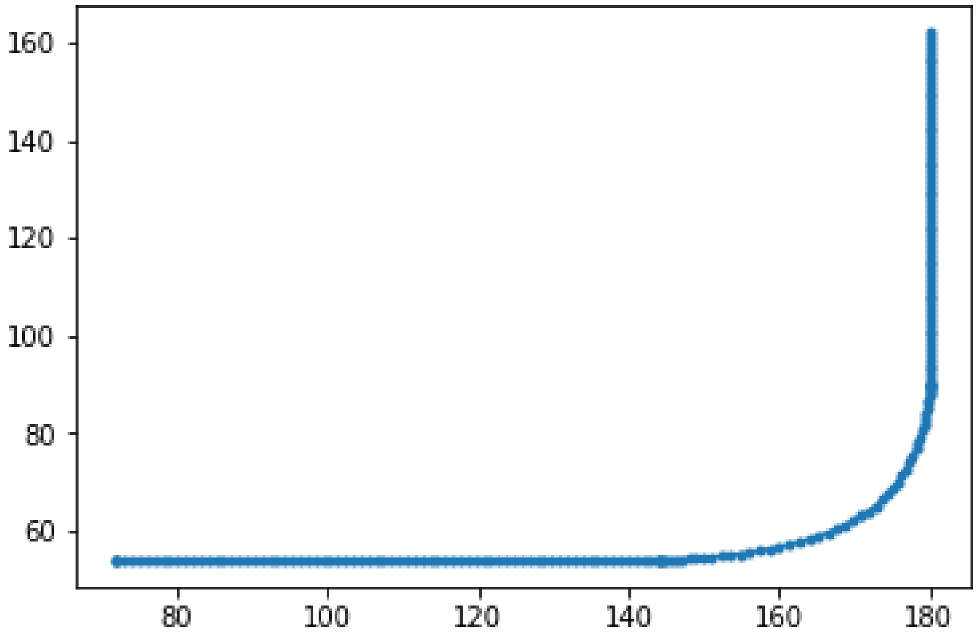
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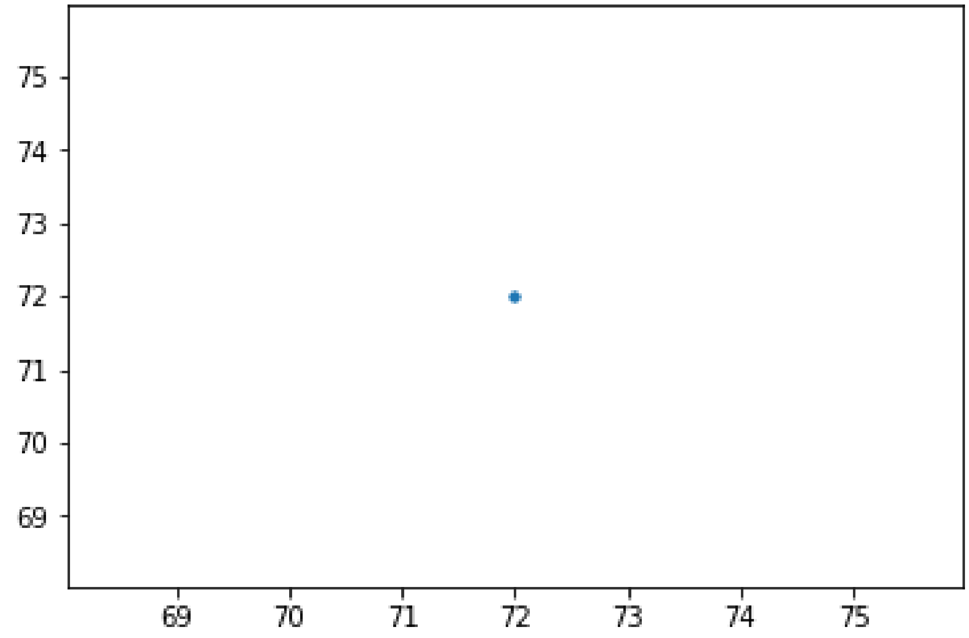
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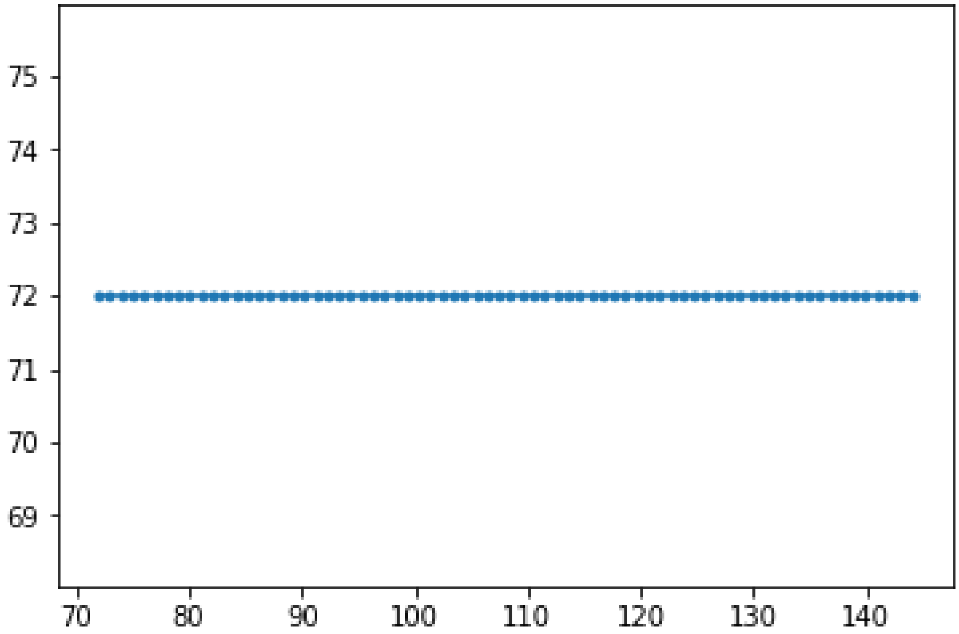

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74
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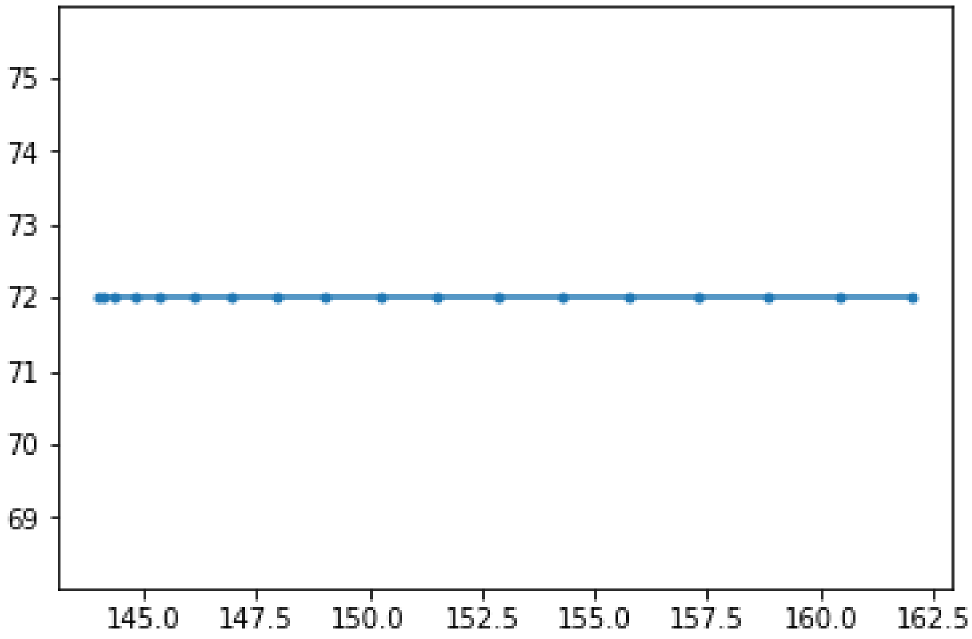
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152.5
155.0
157.5
160.0
162.5

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18
92
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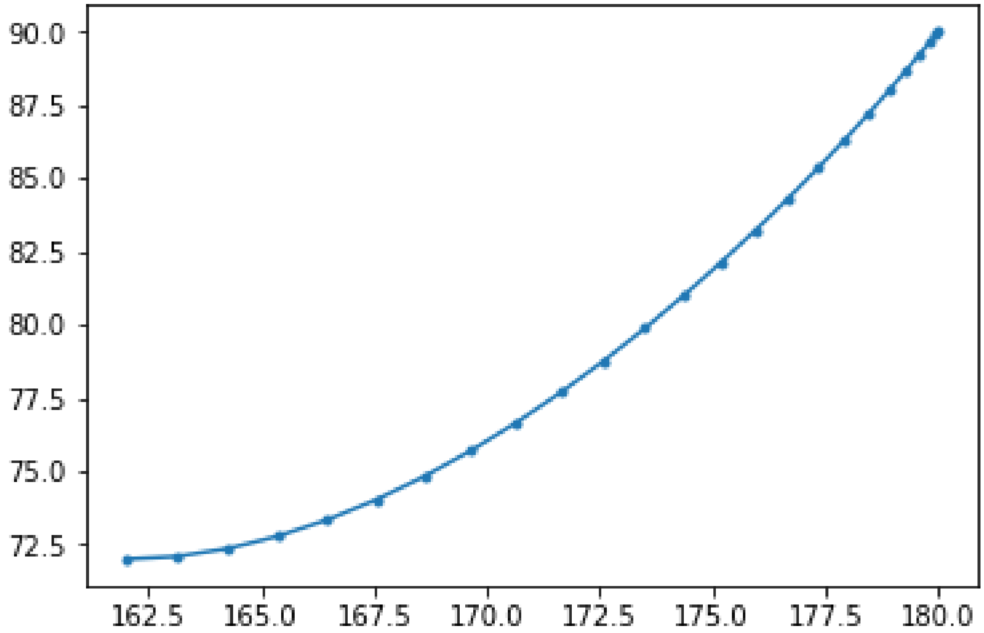
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80.0
77.5
75.0
72.5
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165.0
167.5
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172.5
175.0
177.5
180.0

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25
117
4
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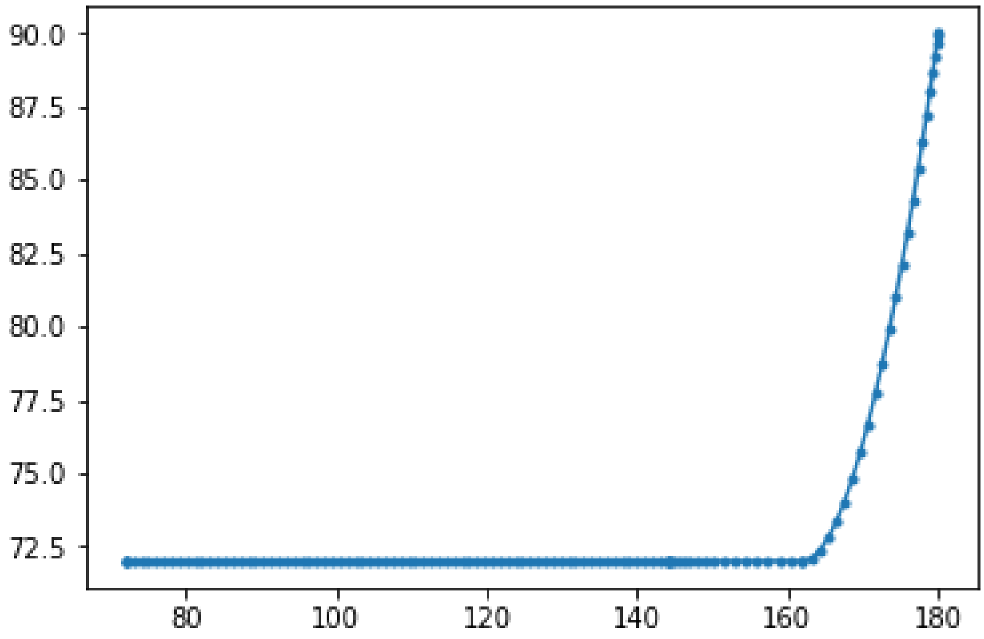
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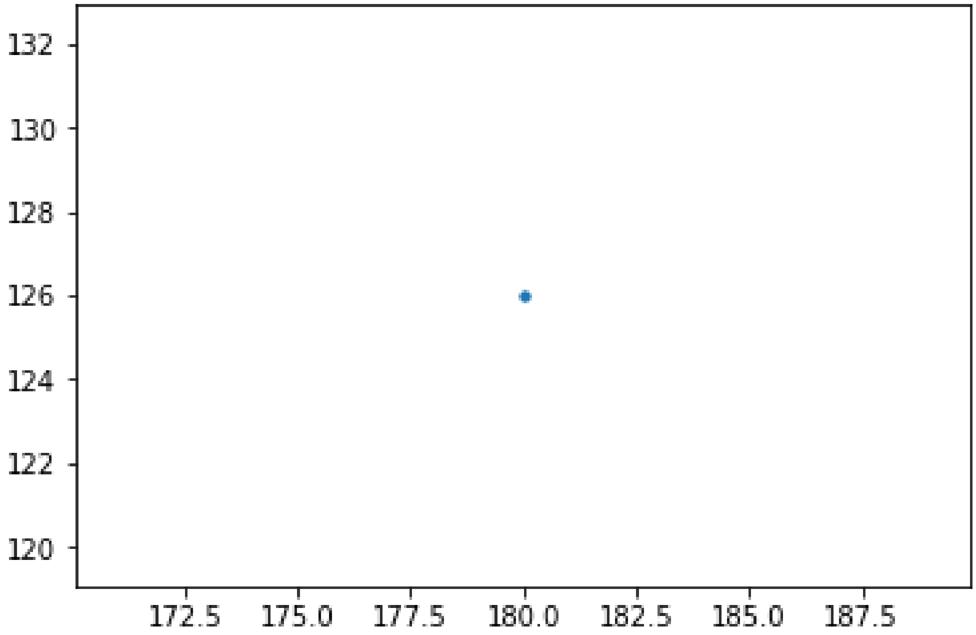
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172.5
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177.5
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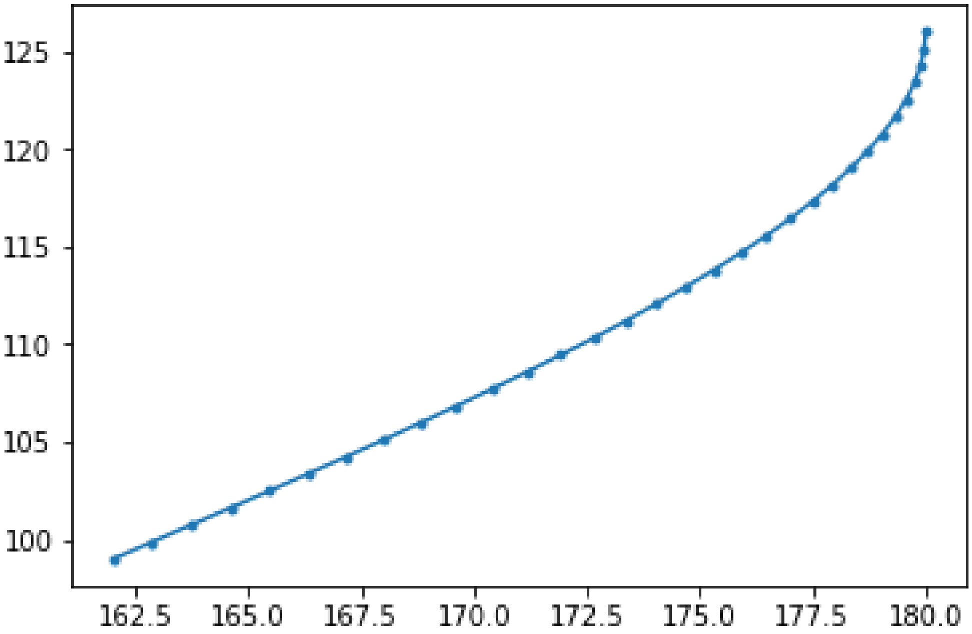
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170.0
172.5
175.0
177.5
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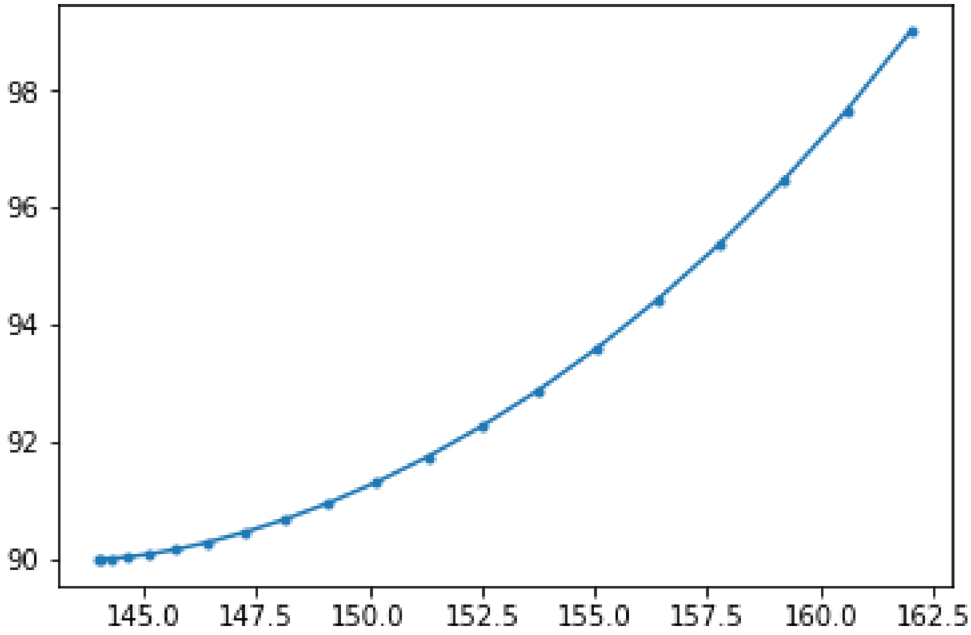
32
34


98
96
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92
90
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147.5
150.0
152.5
155.0
157.5
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54
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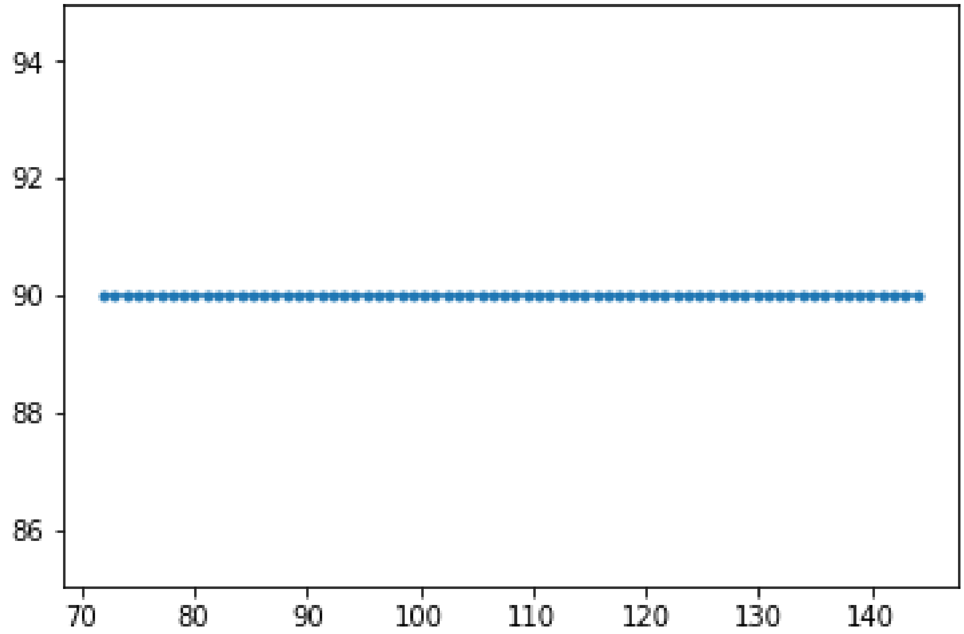

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72
126
4
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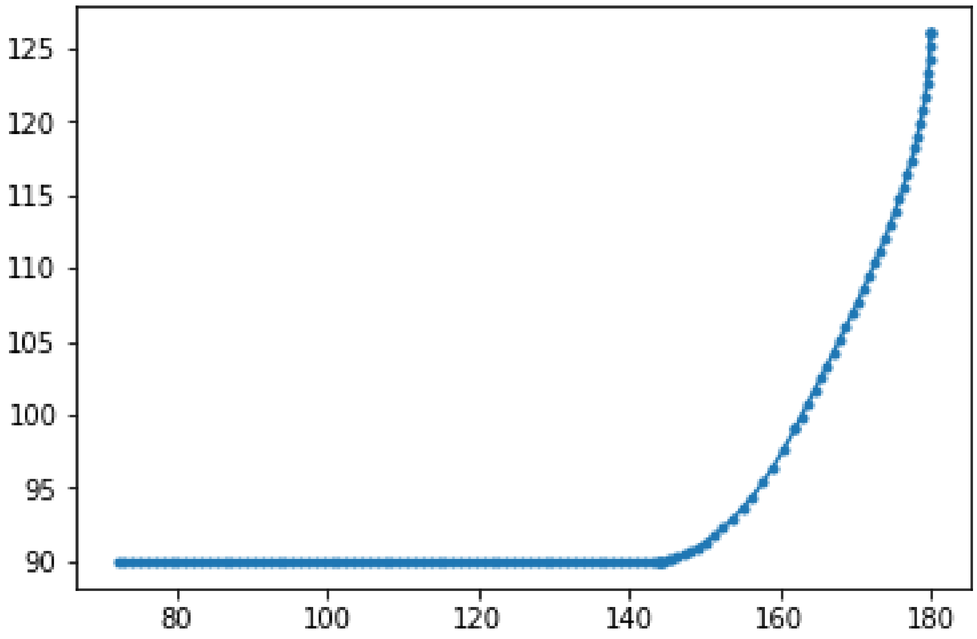
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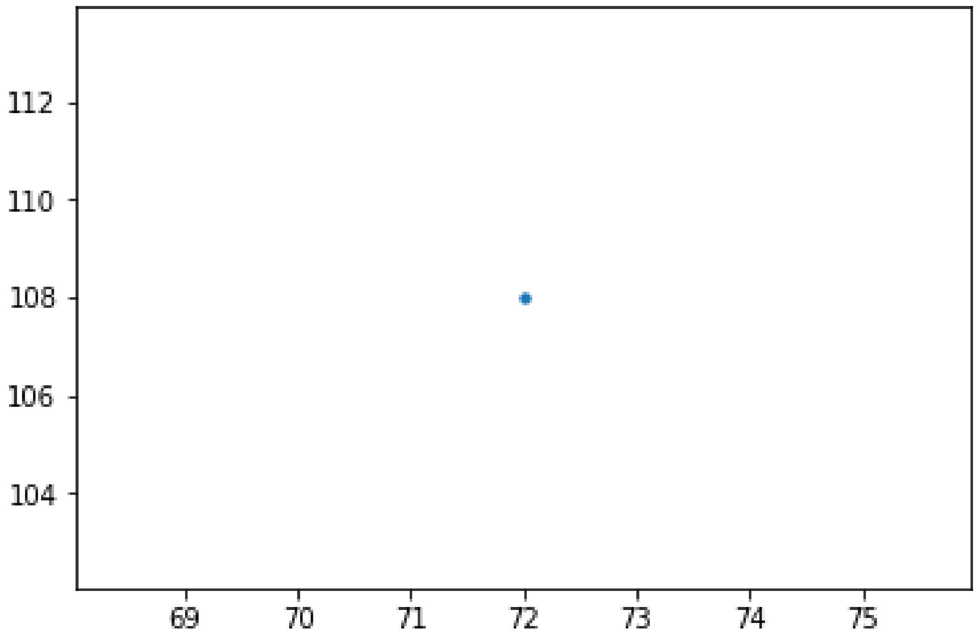
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75

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2
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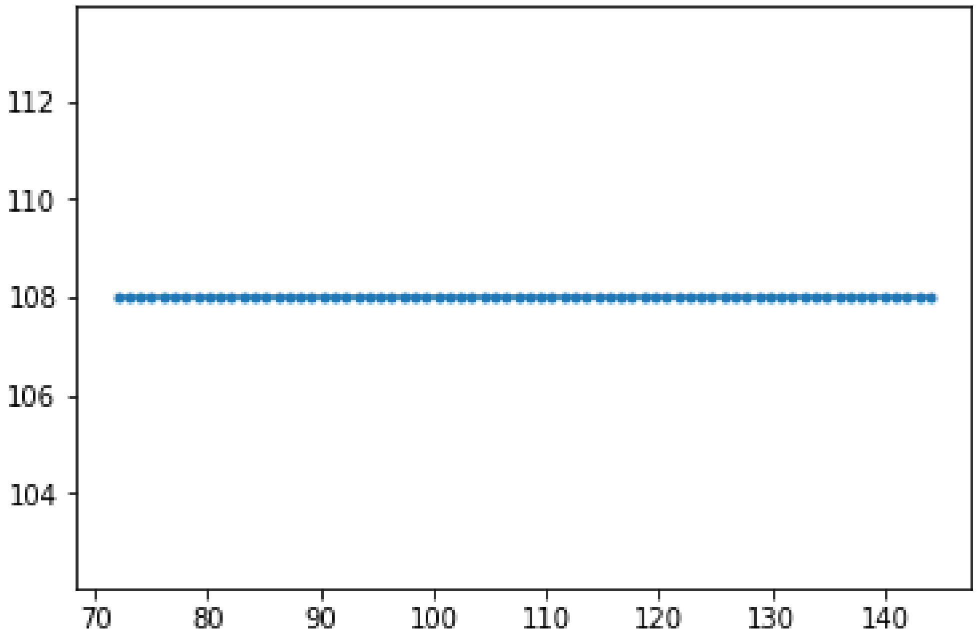
112
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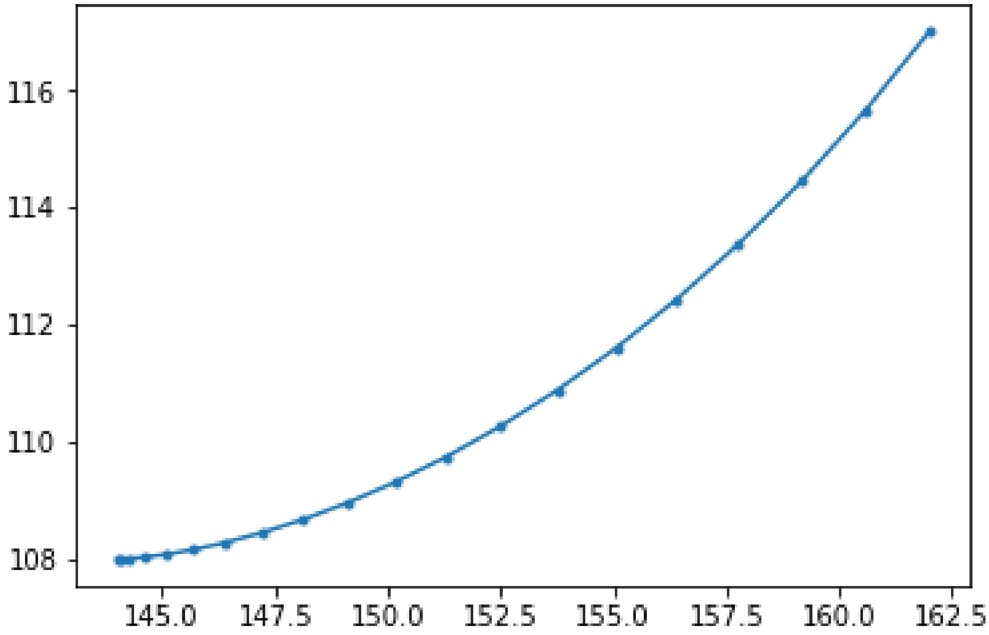
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147.5
150.0
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157.5
160.0
162.5

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94
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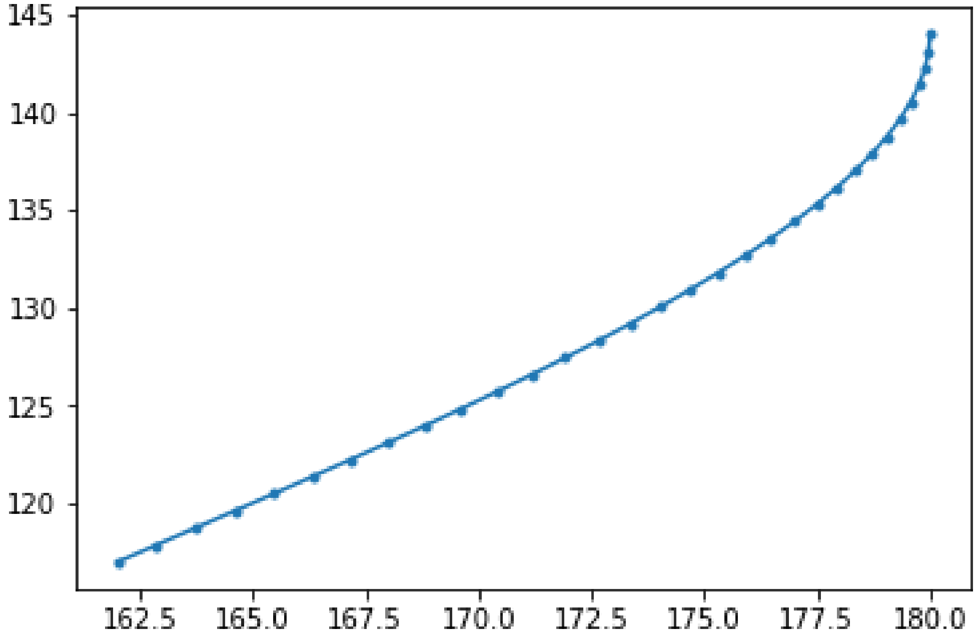
145
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135
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162.5
165.0
167.5
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172.5
175.0
177.5
180.0

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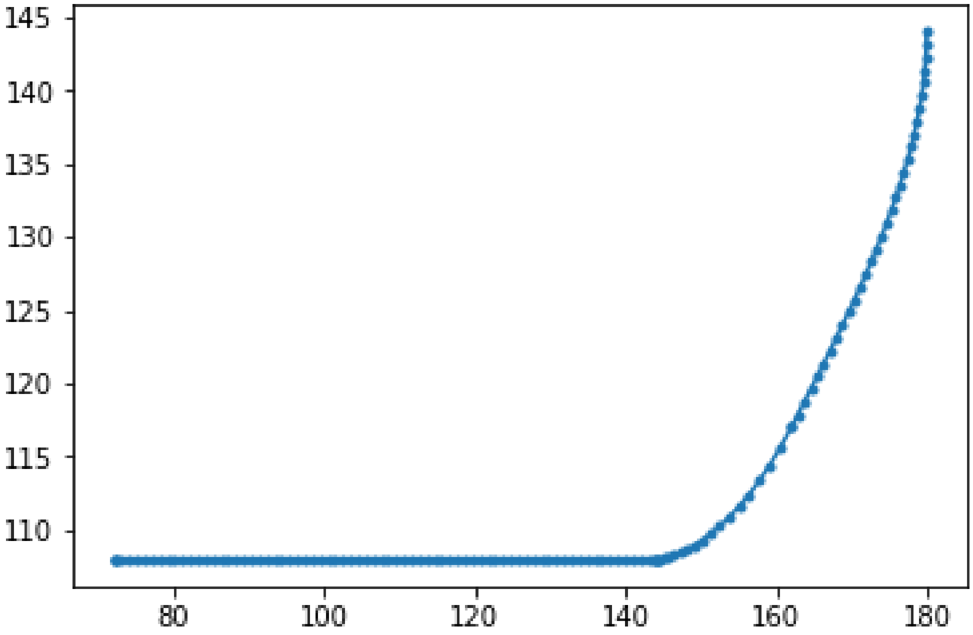
126
4
```



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Out[5]: 4
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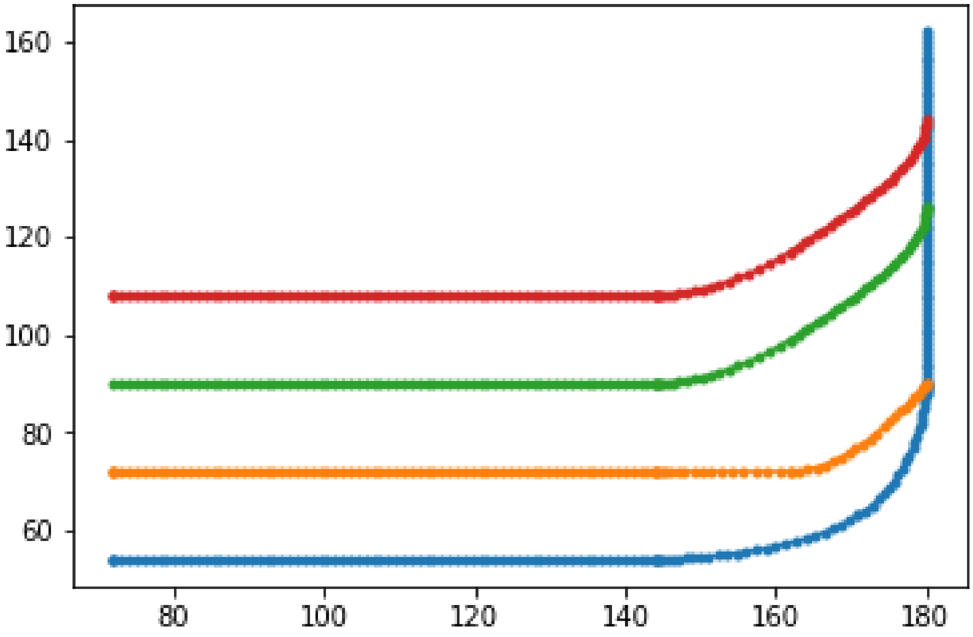
```
In [8]: len(points_np_all)
        for k in range(len(points_np_all)):
            points_np=points_np_all[k]
            plt.plot(points_np[:, 0], points_np[:, 1], '.-')
        plt.show()
```



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In [ ]:
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