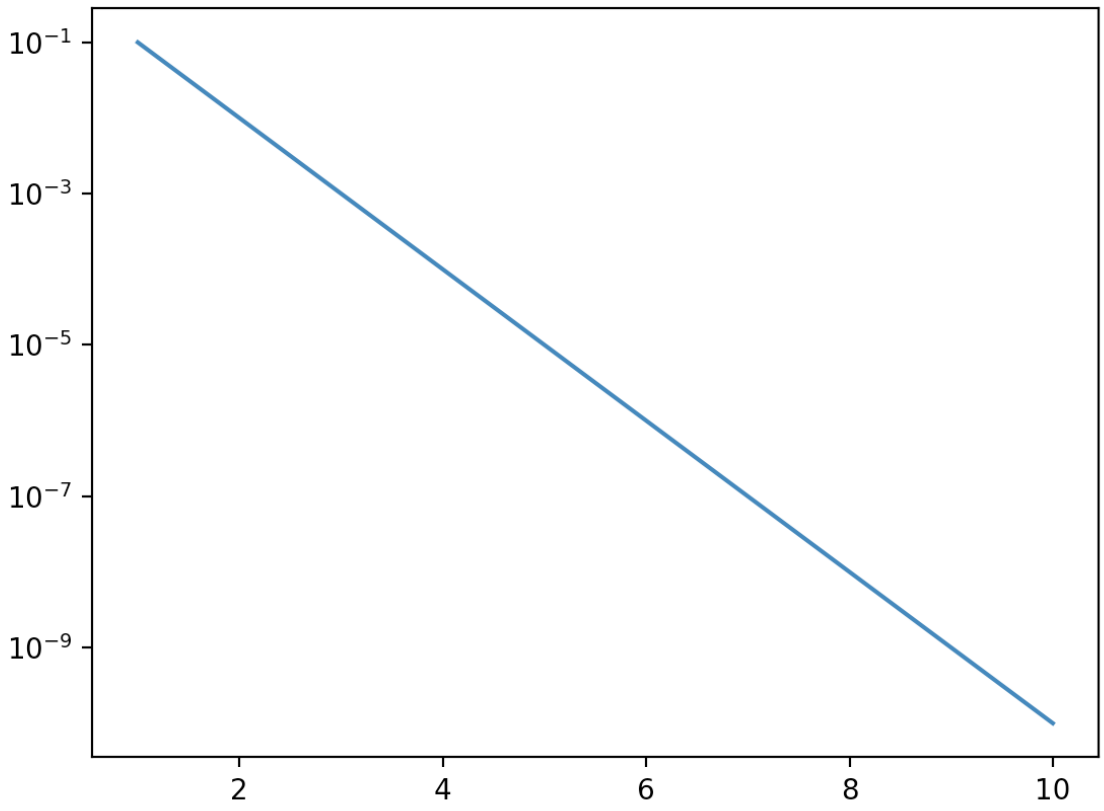
```
➜  ~ cd school
➜  school ls
APPM4600 appm4560 csci1300 math4520 math4530
➜  school cd APPM4400
cd: no such file or directory: APPM4400
➜  school cd APPM4600
➜  APPM4600 ls
➜  APPM4600 mkdir HW
➜  APPM4600 mkdir labs
➜  APPM4600 ls
HW   labs
➜  APPM4600 cd labs
➜  labs mkdir lab1
➜  labs ls
lab1
➜  labs cd /..
➜  / cd \..
➜  / cd
➜  ~ cd Downloads
➜  Downloads cd / ..
cd: no such file or directory: ..Users/oliviacourtney/Downloads
➜  Downloads cd ..
➜  ~ cd APPM4600
cd: no such file or directory: APPM4600
➜  ~ ls
Applications Documents    Library      Music        Public       frechet      school
Desktop      Downloads    Movies       Pictures     cern         opt
➜  ~ cd school
➜  school cd APPM4600
➜  APPM4600 cd ..
➜  school cd
➜  ~ python3
Python 3.9.12 (main, Apr  5 2022, 01:53:17)
[Clang 12.0.0 ] :: Anaconda, Inc. on darwin
Type "help", "copyright", "credits" or "license" for more information.
>>> x = [1, 2, 3]
>>> import numpy as np
>>> y = np.array([1,2,3])
>>> y*3
array([3, 6, 9])
>>> print('this is 3y', 3*y)
this is 3y [3 6 9]
>>> import matplotlib.pyplot as plt
```

```
>>> y*3
array([3, 6, 9])
>>> print('this is 3y', 3*y)
this is 3y [3 6 9]
>>> import matplotlib.pyplot as plt
>>> x = np.linspace(1, 10, 10)
>>> y = np.arange(1, 10, 1)
>>> y = np.arange(2, 20, 2)
>>> print(x[0])
1.0
>>> x[0,2]
Traceback (most recent call last):
  File "<stdin>", line 1, in <module>
IndexError: too many indices for array: array is 1-dimensional, but 2 were indexed
>>> z = [0,1,2]
>>> x[z]
array([1., 2., 3.])
>>> print('The first three elements of x are', x[z])
The first three elements of x are [1. 2. 3.]
>>> w = 10**(-np.linspace(1,10,10))
>>> x
array([ 1.,  2.,  3.,  4.,  5.,  6.,  7.,  8.,  9., 10.])
>>> y
array([ 2,  4,  6,  8, 10, 12, 14, 16, 18])
>>> x = arange(1,10,1)
Traceback (most recent call last):
  File "<stdin>", line 1, in <module>
NameError: name 'arange' is not defined
>>> x = np.arange(1,10,1)
>>> x
array([1, 2, 3, 4, 5, 6, 7, 8, 9])
>>> x = np.arange(1,11,1)
>>> x
array([ 1,  2,  3,  4,  5,  6,  7,  8,  9, 10])
>>> y = np.arange(2, 22, 2)
>>> y
array([ 2,  4,  6,  8, 10, 12, 14, 16, 18, 20])
>>> x
array([ 1,  2,  3,  4,  5,  6,  7,  8,  9, 10])
>>> plt.semilogy(x,w)
[<matplotlib.lines.Line2D object at 0x7fd3684ec580>]
>>> plt.show()
```


10^{-1}
10^{-3}
10^{-5}
10^{-7}
10^{-9}
2
4
6
8
10