Assignment 6, Question 4k, Amogha Sekhar, A53301791

In [1]:
```
import numpy as np
import matplotlib.pyplot as plt
```

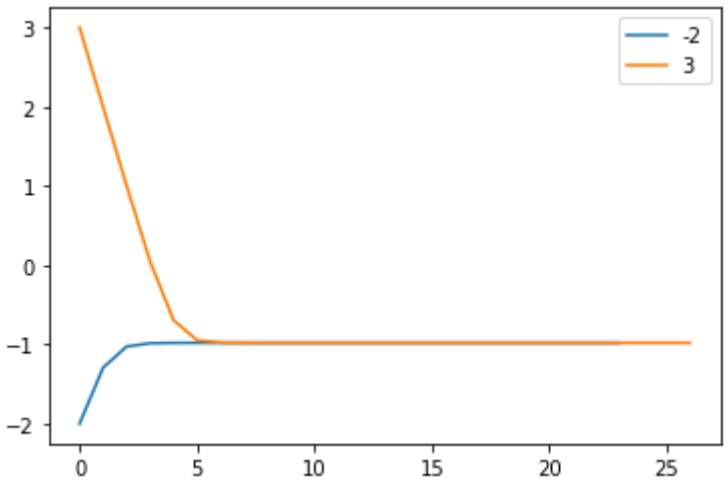
In [2]:
```
def update_x(x):
    sum_ = 0
    for k in range(1,11):
        sum_ += (np.tanh(x + (2/np.sqrt(k))))
    sum_ /= 10
    return (x - sum_)
```

In [3]:
```
def converged(list_x):
    if len(list_x) < 6:
        return False
    flag = True
    for i in range(5):
        if list_x[-i-1][1] != list_x[-i-2][1]:
            flag = False
    return flag
```

In [5]:
```
X = [-2,3]
for x in X:
    list_x = []
    min_ = x
    list_x.append((0, min_))
    counter = 1
    while not converged(list_x):
        min_ = update_x(min_)
        list_x.append((counter, min_))
        counter += 1
    print(x, counter, min_)
    x_axis, y_axis = zip(*list_x)
    plt.plot(x_axis, y_axis, label = x)

plt.legend()
plt.show()
```

```
-2 24 -0.9799826574435251
3 27 -0.9799826574435251
```



In [ ]: