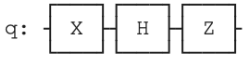
Ejercicio 3

```
from qiskit import QuantumCircuit,  Aer, execute
from qiskit.quantum_info import Operator
import matplotlib.pyplot as plt
import numpy as np
```

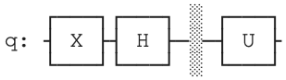
[16]
```
# punto a
qc = QuantumCircuit(1)
qc.x(0)
qc.h(0)
qc.z(0)
qc.draw()
```



[98]
```
# punto b
u = Operator(qc)
print(u)
```

```
Operator([[ 0.70710678+0.j,  0.70710678+0.j],
          [ 0.70710678+0.j, -0.70710678+0.j]],
         input_dims=(2,), output_dims=(2,))
```

[35]
```
# punto c
U = qc.to_gate()
U.name = "U"
circuito = QuantumCircuit(1)
circuito.x(0)
circuito.h(0)
circuito.barrier()
circuito.append(U, [0])
circuito.draw()
```



[36]
```
# punto d
simulator = Aer.get_backend('statevector_simulator')
result = execute(circuito, simulator).result()
state_vector = result.get_statevector()
print(state_vector)
```

```
Statevector([-2.22044605e-16-6.1232340e-17j,
              1.00000000e+00-1.8369702e-16j],
            dims=(2,))
```