Aproximaciones

Luis Eduardo Robles Jimenez

0224969

Input

In [ ]:
```
Matrix = [
    [-5, 5, 3],
    [5, 6, 1],
    [3, 1, 7]
]
Independent = [1, 2, 3]
```

Method

In [ ]:
```
x = GaussSeidel(Matrix, Independent, 2000, 0.00000000001)
print(x)
```

Gauss-Seidel

In [ ]:
```
def GaussSeidel(m, it, n, e):
    print(len(m), "x", len(m), " System:\n", sep = "", end = "")
    for i in range(len(m)):
        print("\t[", end = "")
        for j in range(len(m[i])):
            print(m[i][j], end = " ")
        print("= ", it[i], "]", sep = "")
    print()
    x = [0 for _ in range(len(m))]
    for i in range(len(m)):
        d = m[i][i]
        for j in range(len(m[i])):
            m[i][j] /= d
        it[i] /= d

    for i in range(len(m)):
        s = it[i]
        for j in range(len(m[i])):
            if i != j:
                s -= m[i][j]*x[j]
        x[i] = s
    for _ in range(n):
        print("x[", _, "] = ", x, sep = "")
        c = 1
        for i in range(len(m)):
            o = x[i]
            s = it[i]
            for j in range(len(m[i])):
                if i != j:
                    s -= m[i][j]*x[j]
            x[i] = s
            if c and x[i]:
                error = 100*abs((x[i]-o)/x[i])
                if error > e:
                    c = 0
        if c: break;
    return x
```