# P10 Simulation

**Matric: 17143014/1**

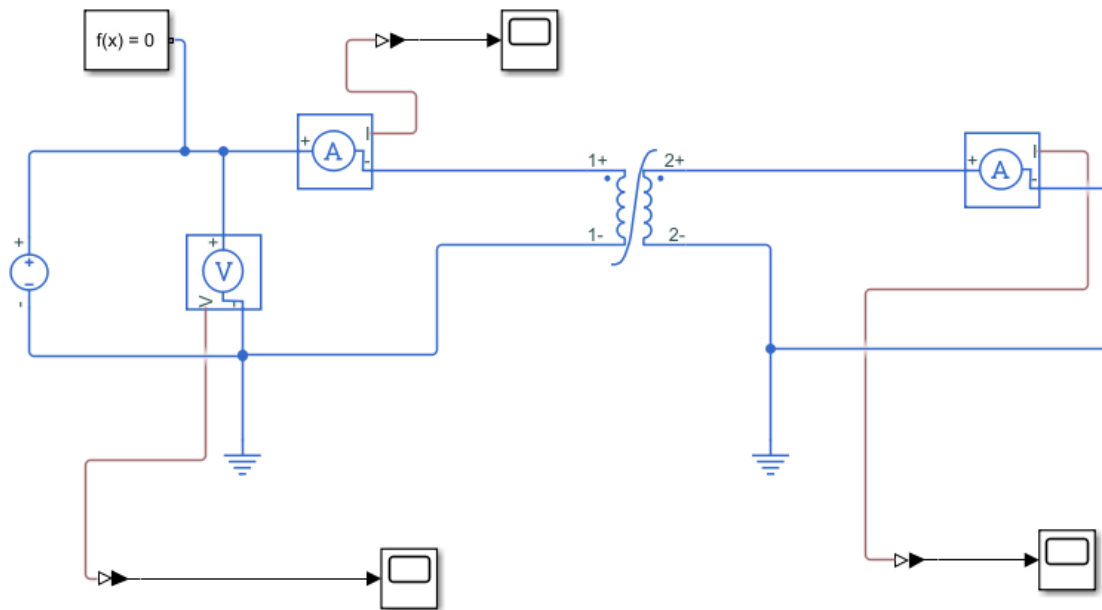## Test 1
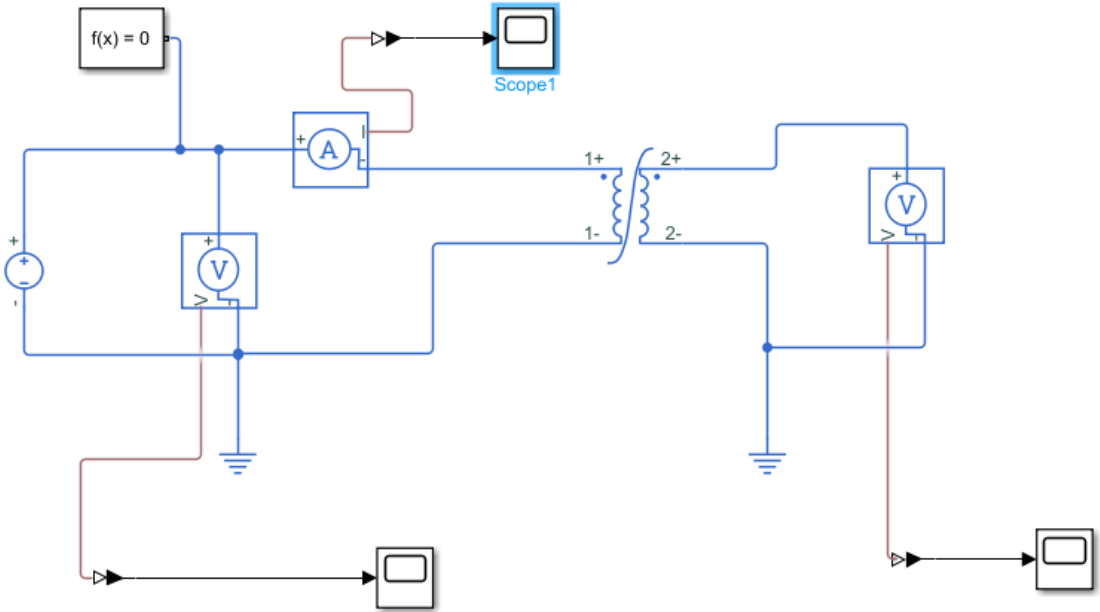


The results are tabled below

| V source | V1 | I1 | V2 |
|---|---|---|---|
| 220 | 220 | 135 | 440 |
| 150 | 150 | 91.8 | 300 |
| 125 | 125 | 76.2 | 250 |
| 100 | 100 | 61.5 | 200 |
| 75 | 75 | 45.5 | 150 |
| 50 | 50 | 30 | 100 |
| 25 | 25 | 11.8 | 49 |
| 10 | 10 | 4 | 20 |

Calculating K for each pair

| V1 | V2 | K |
|---|---|---|
| 220 | 440 | 0.5 |
| 150 | 300 | 0.5 |
| 125 | 250 | 0.5 |
| 100 | 200 | 0.5 |
| 75 | 150 | 0.5 |
| 50 | 100 | 0.5 |
| 25 | 49 | 0.510204 |
| 10 | 20 | 0.5 |

## Test 2



| V source | V1 | I1 | I2 |
|---|---|---|---|
| 4 | 4 | 168.8 | 84.4 |
| 3.5 | 3.5 | 147.65 | 73.8 |
| 3 | 3 | 126.5 | 63.25 |
| 2.5 | 2.5 | 105.5 | 50.25 |
| 2 | 2 | 84.4 | 42.2 |
| 1.5 | 1.5 | 63.3 | 31.5 |
| 1 | 1 | 42.15 | 21.05 |
| 0.5 | 0.5 | 21.1 | 10.55 |

Calculating k for each pair

| I1 | I2 | K |
|---|---|---|
| 168.8 | 84.4 | 0.5 |
| 147.65 | 73.8 | 0.499831 |
| 126.5 | 63.25 | 0.5 |
| 105.5 | 50.25 | 0.476303 |
| 84.4 | 42.2 | 0.5 |
| 63.3 | 31.5 | 0.49763 |
| 42.15 | 21.05 | 0.499407 |
| 21.1 | 10.55 | 0.5 |

# Test 3
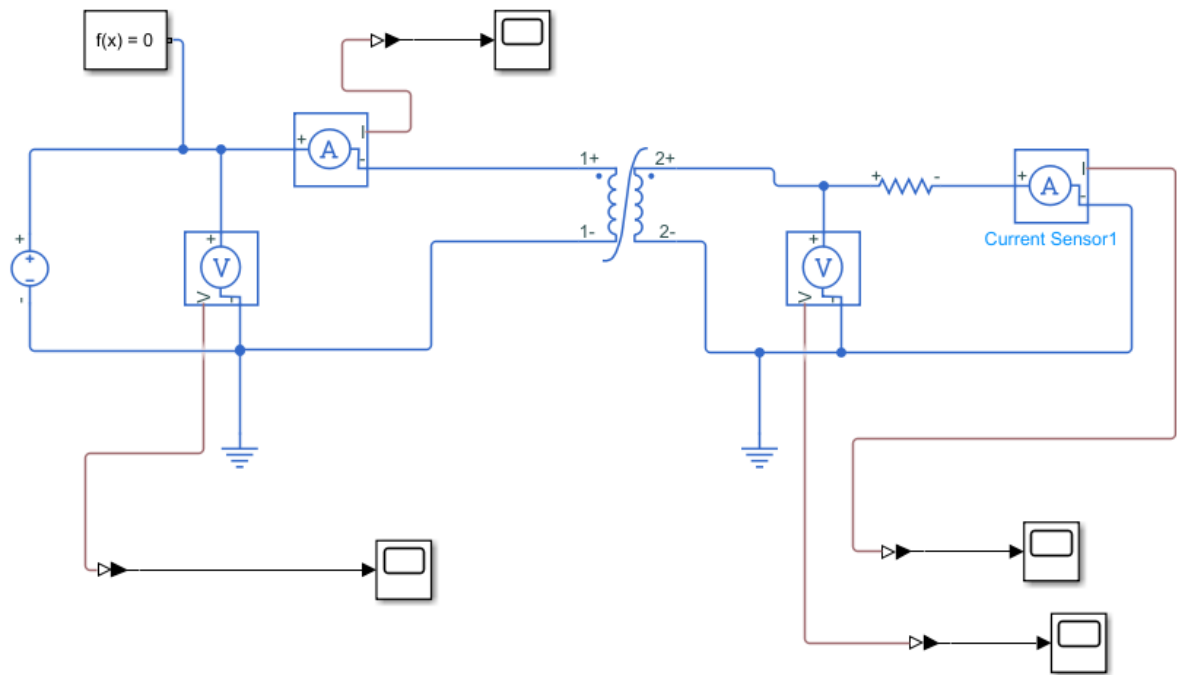


The results at steady state:

When R = 1 ohm and V1 = 220V,

I1 = 895 A,
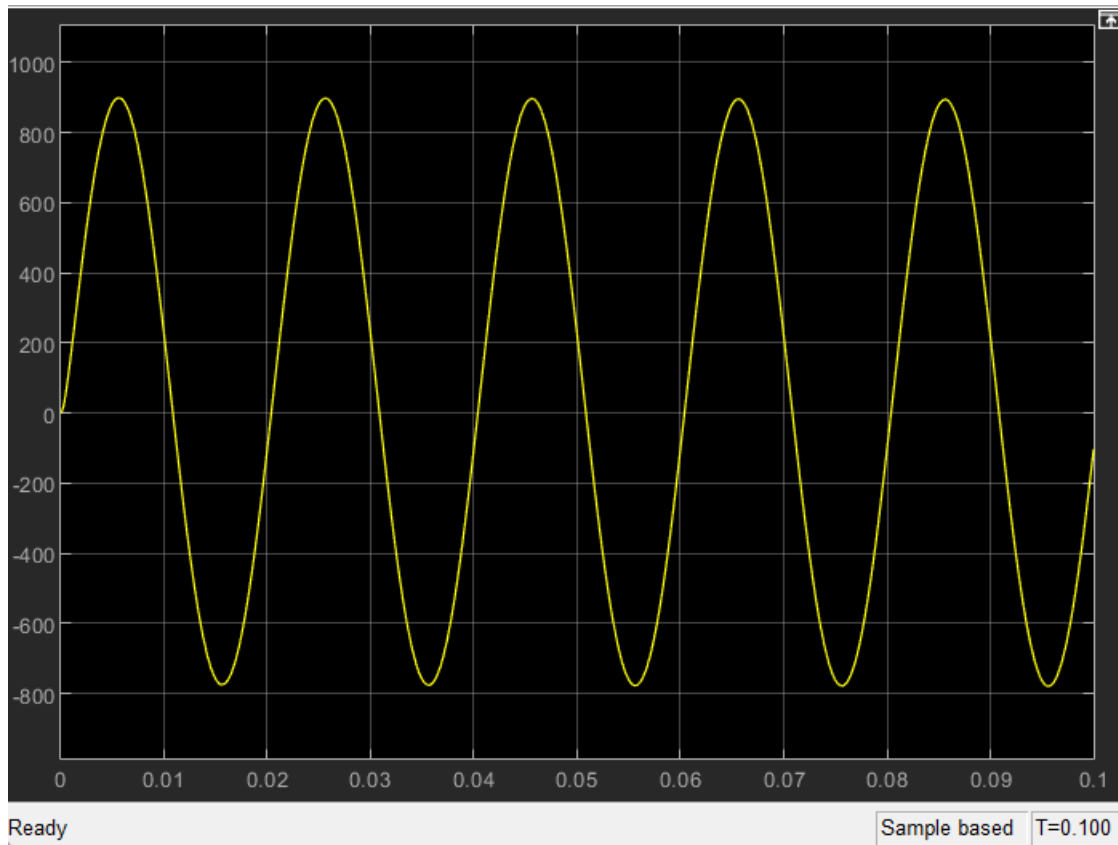


I2 = 414.55 A
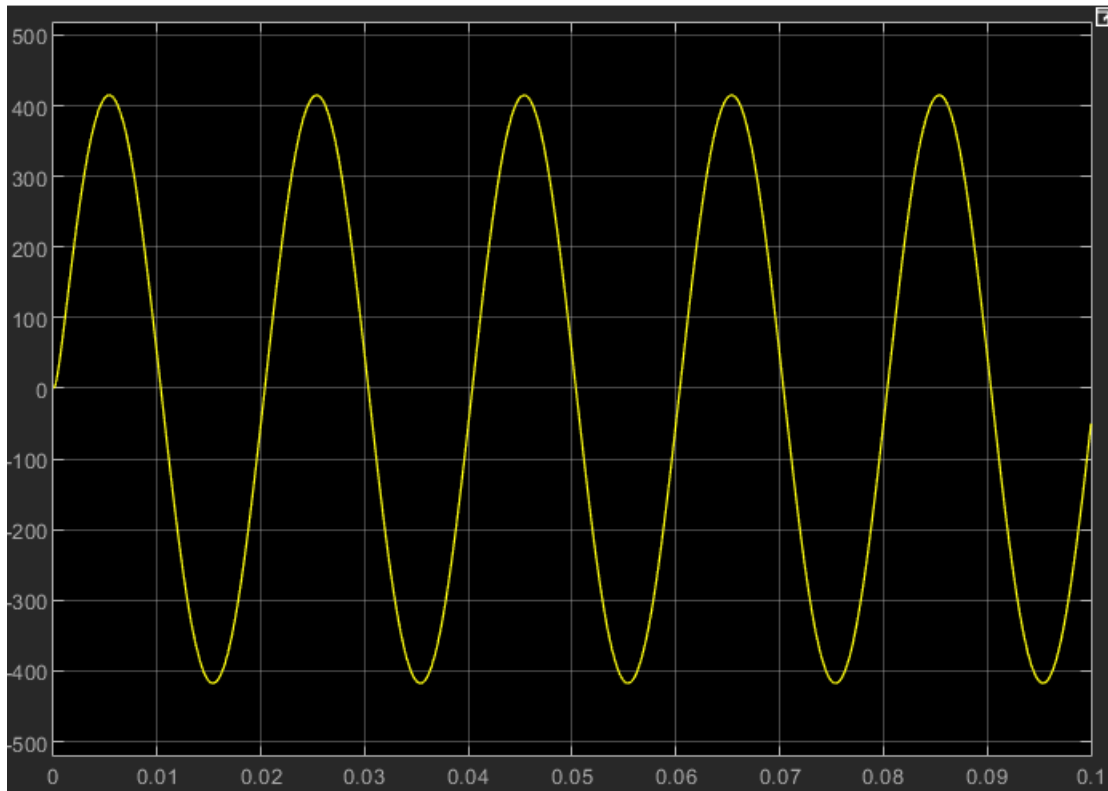
Keeping V1 constant and changing load,

| R | I1 | I2 | V2 |
|---|----|----|----|
| 1K | 133 | 0.43 | 434 |
| 900 | 131 | 0.48 | 434 |
| 700 | 135.1 | 0.625 | 434 |
| 500 | 131.3 | 0.87 | 434 |
| 150 | 131.7 | 2.89 | 434 |
| 50 | 133.6 | 8.66 | 434 |
| 1 | 897 | 415 | 415 |
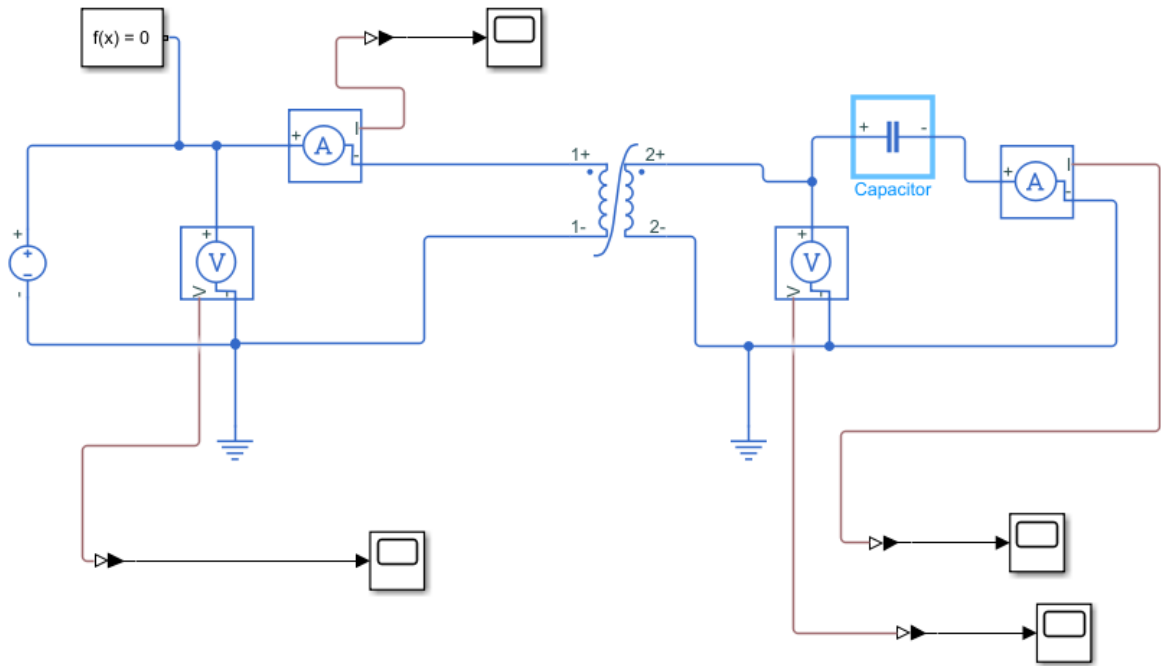
Steady state peak values

I1 = 271 A

I2 = 144 A

V2 = 452.5 V

| C | I1 | I2 | V2 |
|---|---|---|---|
| 0.008 | 3121.3 | 1583 | 627.37 |
| 0.007 | 2587.8 | 1312 | 595.2 |
| 0.006 | 2107.8 | 1069.7 | 566.4 |
| 0.005 | 1671.5 | 850 | 539.5 |
| 0.004 | 1274 | 649.5 | 515.3 |
| 0.003 | 929.5 | 471.4 | 489.92 |
| 0.002 | 582.05 | 297.05 | 472.4 |