

Questions from the same exercise can be combined together to increase difficulty.

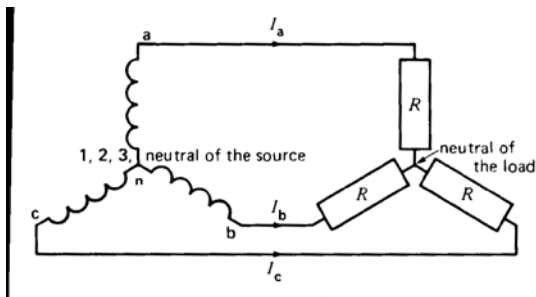
### 8.1

A 3-phase wye-connected generator induces 2400V in each of its windings. What is the line voltage?

- a) 2400V
- b) 4157V
- c) 1386V
- d) 800V

### 8.4 (phase voltage)

The voltage between a and b in the symmetrical three phase network shown in the figure is 620V.

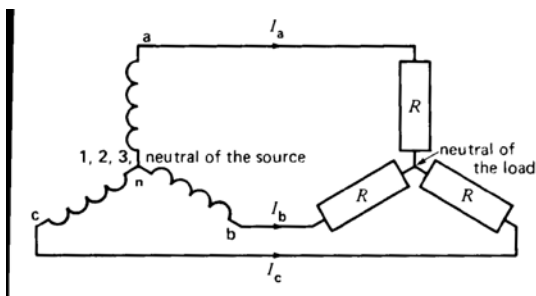


What is the voltage across each resistor?

- a) 620V
- b) 1074V
- c) 310V
- d) 358V

### 8.4 (line current)

The voltage between a and b in the symmetrical three phase network shown in the figure is 620V. The value of the resistor R is  $15\Omega$ .



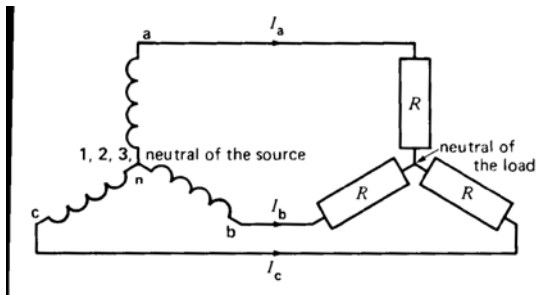
What is the current in each line?

- a) 41A

- b) 71.6A
- c) 20.7A
- d) 23.9A

#### 8.4 (3phase power)

The voltage between a and b in the symmetrical three phase network shown in the figure is 620V. The value of the resistor R is 15Ω.



What is the power supplied to the 3-phase load?

- a) 76260W
- b) 66696W
- c) 19751W
- d) 25668W

#### 8.5 (delta current)

Three resistors are connected in delta. The line voltage is 13.2kV and the line current is 1202A.

What is the current in each resistor?

- a) 694A
- b) 1202A
- c) 3606A
- d) 2082A

#### 8.5 (delta voltage)

Three resistors are connected in delta. The line voltage is 13.2kV and the line current is 1202A.

What is the voltage across each resistor?

- a) 13200V
- b) 4400V

- c) 7621V
- d) 22863V

### 8.5 (delta power)

Three resistors are connected in delta. The line voltage is 13.2kV and the line current is 1202A.

What is the power supplied to each resistor?

- a) 9.16MW
- b) 5.29MW
- c) 27.5MW
- d) 47.6MW

### 8.5 (delta three phase power)

Three resistors are connected in delta. The line voltage is 13.2kV and the line current is 1202A.

What is the power supplied to the three phase load?

- a) 27.48MW
- b) 15.87MW
- c) 82.5MW
- d) 142.8MW

### 8.5 (resistor value)

Three resistors are connected in delta. The line voltage is 13.2kV and the line current is 1202A.

What is the ohmic value of each resistor?

- a)  $19\Omega$
- b)  $3.7\Omega$
- c)  $2\Omega$
- d)  $11\Omega$

### 8.8

Three incandescent lamps rated 60W 120V are connected in delta. What line voltage is needed so that the lamps burn normally? (The incandescent lamps are considered as resistors)

- a) 69.28V

- b) 120V
- c) 0.5V
- d) 360V

**8.9**

Three  $10\Omega$  resistors are connected in delta on a three phase line with 208V line to line voltage. Suddenly, a fuse in one of the lines burns out. What is the power supplied to the load?

- a) 4.3kW
- b) 6.5kW
- c) 12.9kW
- d) 2.16kW

**8.11 (wye)**

A three phase heater dissipates 15kW when connected to a 208V, 3-phase line. What is the line current if the resistors are connected in wye?

- a) 41.6A
- b) 124.9A
- c) 24A
- d) 72A

**8.11 (delta)**

A three phase heater dissipates 15kW when connected to a 208V, 3-phase line. What is the line current if the resistors are connected in delta?

- a) 124.9A
- b) 41.6A
- c) 24A
- d) 72A

**8.11 (wye resistor value)**

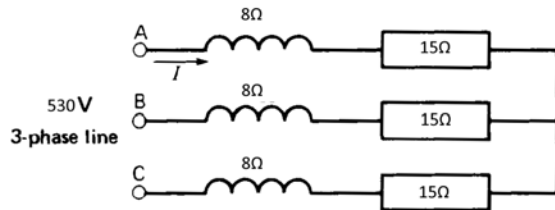
A three phase heater dissipates 15kW when connected to a 208V, 3-phase line. What is the value of each resistor if they are connected in wye?

- a)  $2.9\Omega$

- b)  $8.7\Omega$
- c)  $0.96\Omega$
- d)  $0.32\Omega$

**8.16**

Three  $15\Omega$  resistors and three  $8\Omega$  reactors are connected as shown below. The line voltage is  $530\text{V}$ .



What is the active reactive and apparent power supplied to the three phase load?

- a)  $P=14600\text{W}$ ,  $Q=7776\text{VAr}$ ,  $S=16524\text{VA}$
- b)  $P=7965\text{W}$ ,  $Q=4248\text{VAr}$ ,  $S=9027\text{VA}$
- c)  $P=23895\text{W}$ ,  $Q=12744\text{VAr}$ ,  $S=27081\text{VA}$
- d)  $P=43739\text{W}$ ,  $Q=23327\text{VAr}$ ,  $S=49571\text{VA}$