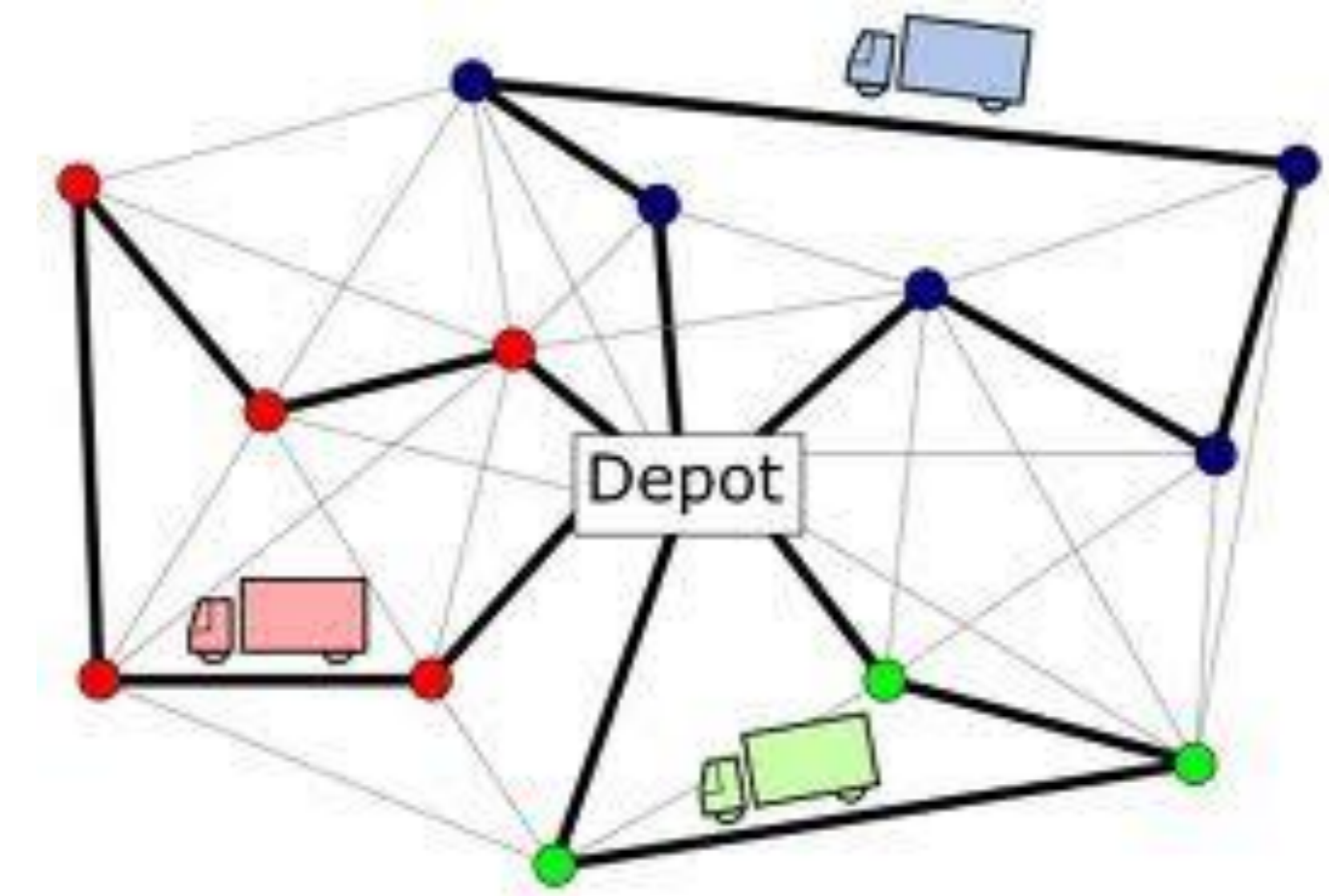


SISTEM TRANSPORTASI DAN DISTRIBUSI BARANG

Model Matematis dan Algoritma Heuristik Permasalahan Perutean Kendaraan (VRP)

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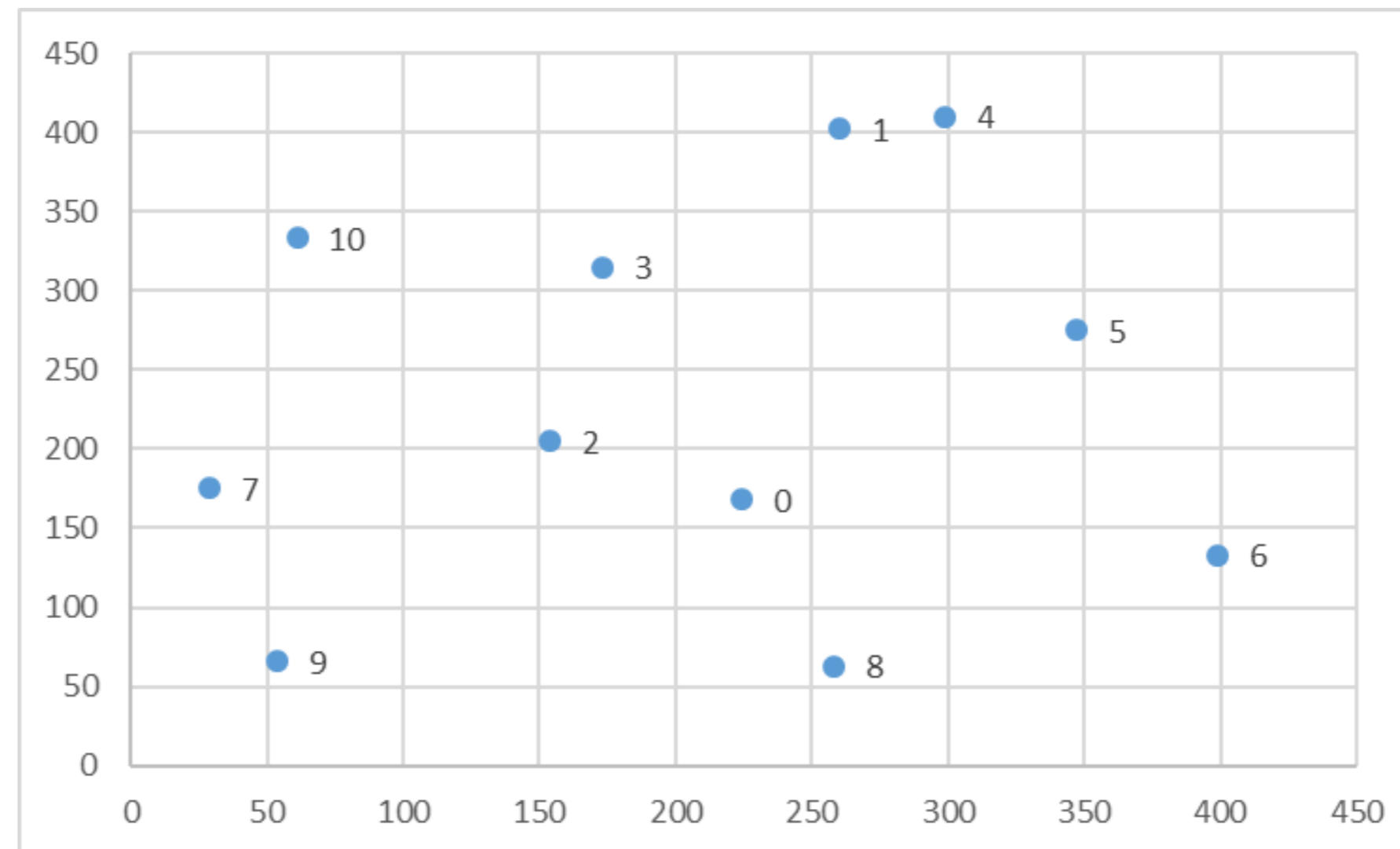
Ilustrasi dan Contoh Permasalahan



Ilustrasi dan Contoh Permasalahan VRP

- Terdapat 10 permintaan pelanggan dengan data sebagai berikut:

Node	X	Y	Demand
0	224	168	0
1	260	402	39
2	154	205	30
3	173	315	31
4	299	410	67
5	347	275	83
6	399	133	39
7	29	175	89
8	258	63	89
9	54	66	77
10	61	333	96



- Kapasitas maksimum kendaraan adalah 500 unit satuan berat

Solusi dari Solver

```
H 0 0 1676.000000 1330.00000 20.6% - 0s
H 0 0 1615.000000 1330.00000 17.6% - 0s
0 0 1330.00000 0 25 1615.00000 1330.00000 17.6% - 0s
0 0 1330.00000 0 24 1615.00000 1330.00000 17.6% - 0s
0 0 1330.00000 0 23 1615.00000 1330.00000 17.6% - 0s
0 0 1330.00000 0 22 1615.00000 1330.00000 17.6% - 0s
0 0 1330.00000 0 21 1615.00000 1330.00000 17.6% - 0s
0 0 1330.00000 0 20 1615.00000 1330.00000 17.6% - 0s
0 2 1330.00000 0 20 1615.00000 1330.00000 17.6% - 0s
H 776 367 1588.000000 1393.81070 12.2% 5.5 0s
* 1645 562 20 1587.000000 1440.95072 9.20% 5.7 0s
* 3693 442 16 1579.000000 1510.71415 4.32% 6.6 0s
```

Cutting planes:

```
Gomory: 6
Cover: 6
Implied bound: 17
Clique: 2
MIR: 26
Inf proof: 1
```

```
Explored 4407 nodes (29315 simplex iterations) in 0.60 seconds
Thread count was 8 (of 8 available processors)
```

```
Solution count 10: 1579 1587 1588 ... 2591
```

```
Optimal solution found (tolerance 1.00e-04)
Best objective 1.579000000000e+03, best bound 1.579000000000e+03, gap 0.0000%
```

Solusi adalah dua perjalanan dengan rute sebagai berikut:

```
[ V1 ] D => C7 => C9 => D
```

```
( D , C7 ) : g(D) = 000.00
( C7 , C9 ) : g(C7) = 089.00
( C9 , D ) : g(C9) = 166.00
```

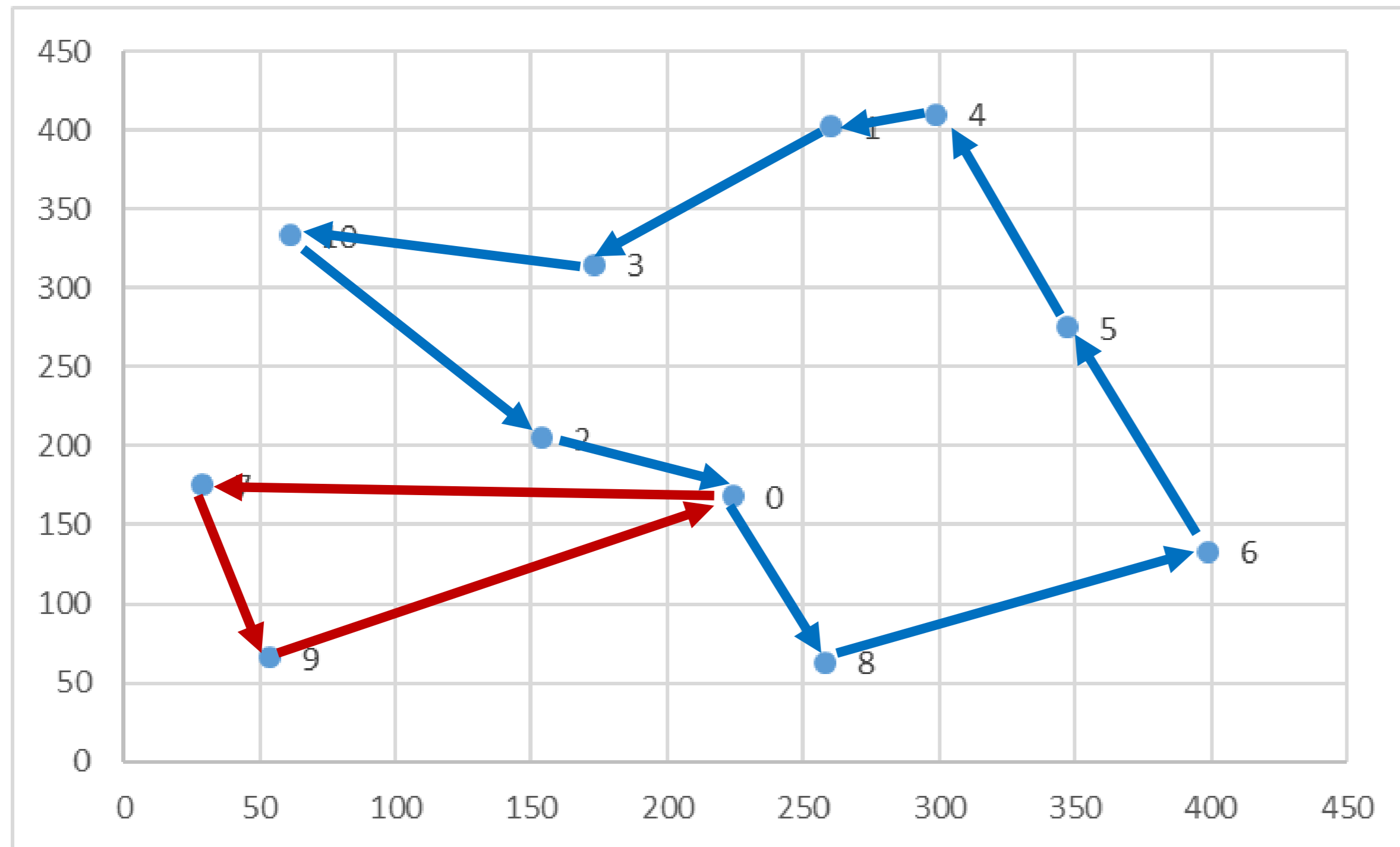
```
[ V2 ] D => C8 => C6 => C5 => C4 => C1 => C3 => C10 => C2 => D
```

```
( D , C8 ) : g(D) = 000.00
( C1 , C3 ) : g(C1) = 343.00
( C2 , D ) : g(C2) = 500.00
( C3 , C10 ) : g(C3) = 374.00
( C4 , C1 ) : g(C4) = 304.00
( C5 , C4 ) : g(C5) = 237.00
( C6 , C5 ) : g(C6) = 154.00
( C8 , C6 ) : g(C8) = 115.00
( C10 , C2 ) : g(C10) = 470.00
```

OPTIMAL VALUE= 1579.0

RUNTIME= 0.598398208618

Representasi Solusi



```
[ V1 ] D => C7 => C9 => D
( D , C7 ) : g(D) = 000.00
( C7 , C9 ) : g(C7) = 089.00
( C9 , D ) : g(C9) = 166.00
[ V2 ] D => C8 => C6 => C5 => C4 => C1 => C3 => C10 => C2 => D
( D , C8 ) : g(D) = 000.00
( C1 , C3 ) : g(C1) = 343.00
( C2 , D ) : g(C2) = 500.00
( C3 , C10 ) : g(C3) = 374.00
( C4 , C1 ) : g(C4) = 304.00
( C5 , C4 ) : g(C5) = 237.00 |
( C6 , C5 ) : g(C6) = 154.00
( C8 , C6 ) : g(C8) = 115.00
( C10 , C2 ) : g(C10) = 470.00
```

 OPTIMAL VALUE= 1579.0
 RUNTIME= 0.598398208618
