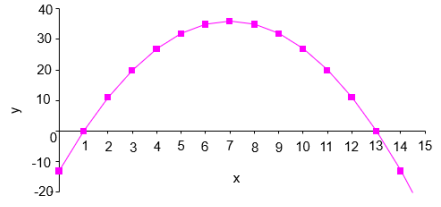
**SOAL**

Silahkan diselesaikan dengan PSO, untuk masalah maksimasi (mencari nilai maksimum) dari sebuah fungsi sebagai berikut:

Grafik dari fungsi tersebut :



Nilai maksimum fungsi adalah y=36 pada x=7.

**JAWABAN**

c1 = 0.6

c2 = 0.6

Jumlah iterasi = 5

Jumlah partikel = N = 6

x1(0) = 6 F1(0) = f(6) = - 62 + 14 \* 6 - 13 = 35 V1(0) = 0 Pbest1 = 6

x2(0) = 12 F2(0) = f(12) = - 122 + 14 \* 12 - 13 = 11 V2(0) = 0 Pbest2 = 12

x3(0) = 0 F3(0) = f(0) = - 02 + 14 \* 0 - 13 = -13 V3(0) = 0 Pbest3 = 0

x4(0) = 4 F4(0) = f(4) = - 42 + 14 \* 4 - 13 = 27 V4(0) = 0 Pbest4 = 4

x5(0) = 15 F5(0) = f(15) = - 152 + 14 \* 15 - 13 = -28 V5(0) = 0 Pbest5 = 15

Gbest = 5

* Iterasi 1

r1(1) = 0.8

r2(1) = 0.4

V1(1) = 0 + 0.5 \* 0.8 \* (6 - 6) + 0.5 \* 0.4 \* (6 - 6) = 0

V2(1) = 0 + 0.5 \* 0.8 \* (12 - 12) + 0.5 \* 0.4 \* (5 - 12) = -1.44

V3(1) = 0 + 0.5 \* 0.8 \* (0 - 0) + 0.5 \* 0.4 \* (6 - 0) = 1.44

V4(1) = 0 + 0.5 \* 0.8 \* (4 – 4) + 0.5 \* 0.4 \* (6 – 4) = 0.48

V5(1) = 0 + 0.5 \* 0.8 \* (15 - 15) + 0.5 \* 0.4 \* (6 - 15) = -2.16

x1(1) = 5 + 0 = 9

x2(1) = 11 + (-0.9) = 10.1

x3(1) = 0 + 0.75 = 0.75

x4(1) = 3 + 0.3 = 3.3

x5(1) = 14 + (-1.35)= 12.65

F1(1) = f(9) = - 92 + 14 \* 9 - 13 = 32

F2(1) = f(10.1) = - 10.12 + 14 \* 10.1 - 13 = 26.39

F3(1) = f(0.75) = - 0.752 + 14 \* 0.75 - 13 = -3.0625

F4(1) = f(3.3) = - 3.32 + 14 \* 3.3 - 13 = 22.31

F5(1) = f(12.65) = - 12.652 + 14 \* 12.65 - 13 = 4.0775

Pbest1 = 9

Pbest2 = 10.1

Pbest3 = 0.75

Pbest4 = 3.3

Pbest5 = 12.65

Gbest = 5

* Iterasi 2

r1 = 1 r2 = 0.6

V1(2) = 0 x1(2) = 5 F1(2) = 32 Pbest1 = 5

V2(2) = -2.43 x2(2) = 7.67 F2(2) = 35.5511 Pbest2 = 7.67

V3(2) = 2.025 x3(2) = 2.775 F3(2) = 18.149375 Pbest3 = 2.775

V4(2) = 0.81 x4(2) = 4.11 F4(2) = 27.6479 Pbest4 = 4.11

V5(2) = -3.645 x5(2) = 9.005 F5(2) = 31.979975 Pbest5 = 9.005

Gbest = 7.67

* Iterasi 3

r1 = 0.1 r2 = 0.7

V1(3) = 0.9345 x1(3) = 5.9345 F1(3) = 34.86470975 Pbest1 = 5.9345

V2(3) = -2.43 x2(3) = 5.24 F2(3) = 32.9024 Pbest2 = 7.67

V3(3) = 3.73825 x3(3) = 6.51325 F3(3) = 35.76307444 Pbest3 = 6.51325

V4(3) = 2.056 x4(3) = 6.166 F4(3) = 35.304444 Pbest4 = 6.166

V5(3) = -4.11225 x5(3) = 4.89275 F5(3) = 31.55949744 Pbest5 = 9.005

Gbest = 6.51325

* Iterasi 4

r1 = 0.6 r2 = 0.4

V1(4) = 1.05025 x1(4) = 6.98475 F1(4) = 35.99976744 Pbest1 = 6.98475

V2(4) = -1.44635 x2(4) = 3.79365 F2(4) = 25.71931968 Pbest2 = 7.67

V3(4) = 3.73825 x3(4) = 10.2515 F3(4) = 25.42774775 Pbest3 = 6.51325

V4(4) = 2.12545 x4(4) = 8.29145 F4(4) = 34.3321569 Pbest4 = 6.166

V5(4) = -2.554475 x5(4) = 2.338275 F5(4) = 14.26832002 Pbest5 = 9.005

Gbest = 6.98475

* Iterasi 5

r1 = 0.8 r2 = 0.3

V1(5) = 1.05025 x1(5) = 8.035 F1(5) = 34.928775 Pbest1 = 6.98475

V2(5) = 0.260475 x2(5) = 4.054125 F2(5) = 27.32182048 Pbest2 = 7.67

V3(5) = 1.869125 x3(5) = 12.120625 F3(5) = 9.779199609 Pbest3 = 6.51325

V4(5) = 1.132175 x4(5) = 9.423625 F4(5) = 30.12604186 Pbest4 = 6.166

V5(5) = 0.2805375 x5(5) = 2.6188125 F5(5) = 16.80519609 Pbest5 = 9.005

Gbest = 6.98475

Nilai maksimum = 35.99976744

Setelah iterasi ke-5, didapat Gbest sebesar 6.98475, dengan nilai maksimumnya adalah 35.99976744