

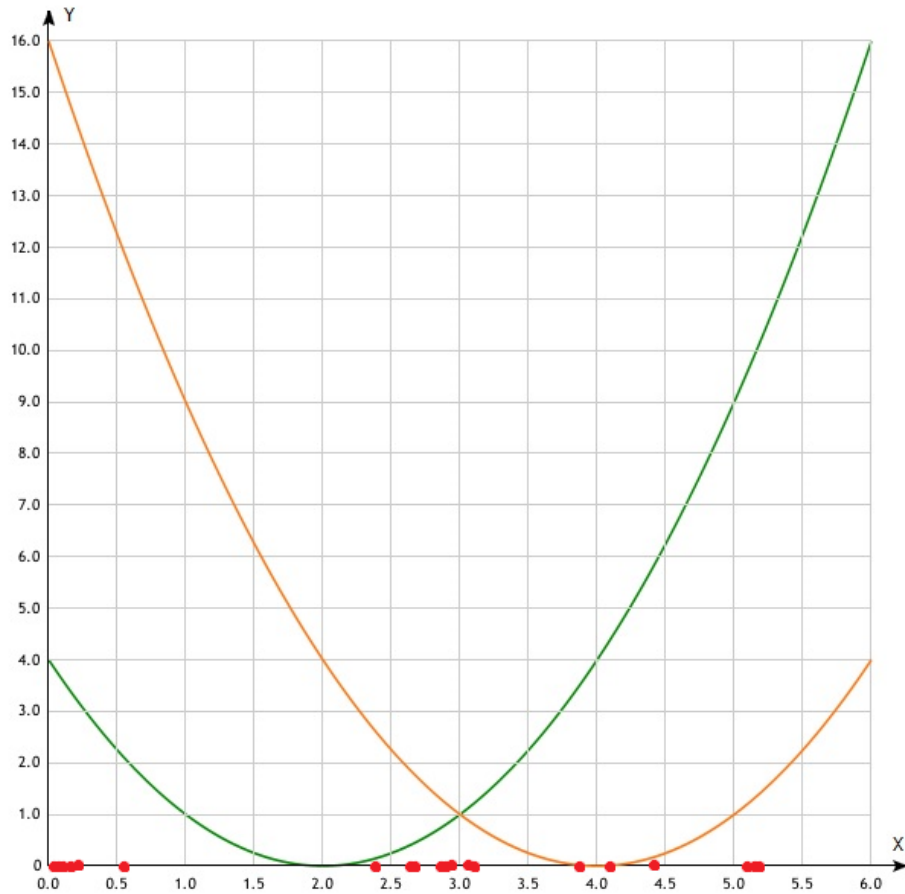
Algorithm:

$$y1 = (x-2)^2 \text{ and } y2 = (x-4)^2$$

1. Create 20 10-bit binary chromosomes, assuming each chromosome represent x-cordinate ranges from 0 to 6 with (0000...00) and (1111...11) being corresponding to 0 and 6, respectively.
2. Calculate y 1 and y 2 for each of 20 x's represented by these 20 chromosomes.
3. Select individuals uniformly from population.
4. Perform crossover and mutation to create a child.
5. Calculate the rank of the new child.
6. Find the individual in the entire population that is most similar to the child. Replace that individual with the new child if the child's ranking is better, or if the child dominates it.
7. Update the ranking of the population if the child has been inserted.
8. Perform steps 2-6 according to the population size.

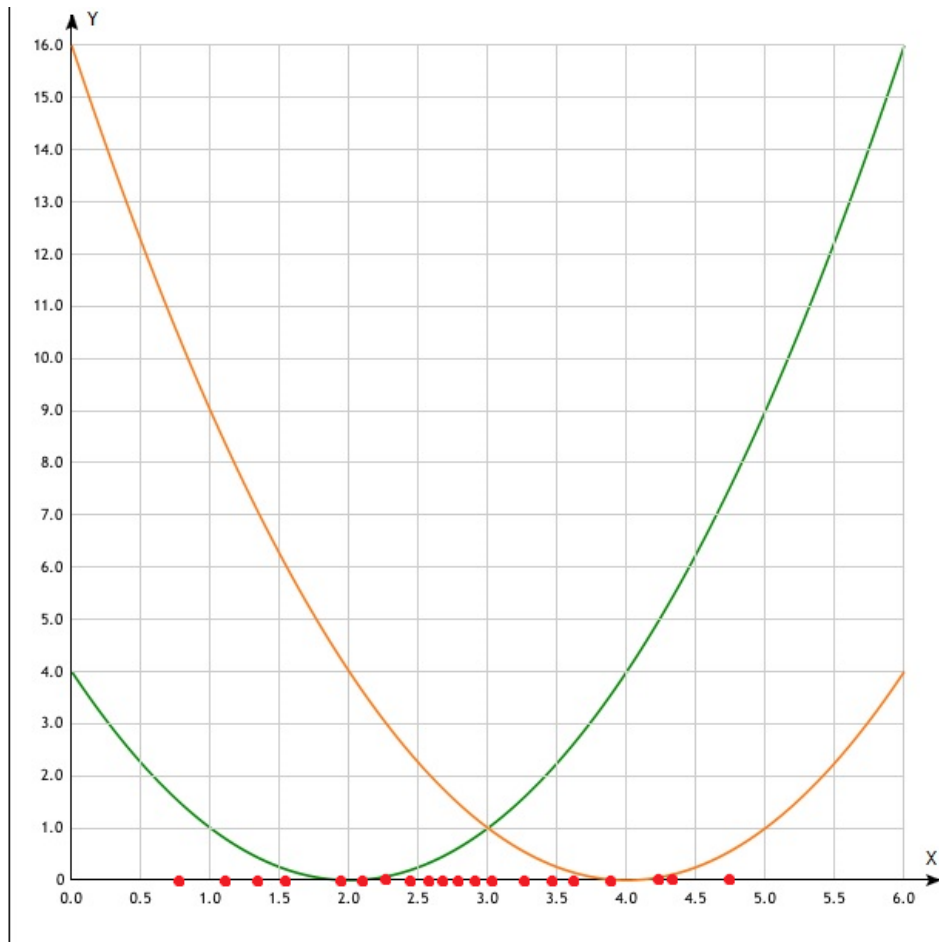
First iteration:

Chromosome	x	y1	y2	Rank
0111110111	2,95014663	0,90277861	1,1021921	8
1110000010	5,26686217	10,6723884	1,60493976	0
1101111110	5,24340176	10,519655	1,54604794	1
1000001100	3,07331378	1,15200248	0,85874734	8
1011101111	4,40469208	5,78254401	0,16377568	3
1101111101	5,23753666	10,4816436	1,53149698	2
0000110101	0,31085044	2,85322624	13,6098245	3
0000000101	0,02932551	3,88355793	15,7662559	0
0111101011	2,8797654	0,77398715	1,25492557	8
0110100110	2,47507331	0,22569465	2,3254014	5
0000011011	0,15835777	3,3916461	14,758215	1
1010001101	3,82991202	3,34857801	0,02892992	6
0111000101	2,6568915	0,43150644	1,80394045	5
0000101101	0,26392962	3,01394037	13,9582219	2
0111000101	2,6568915	0,43150644	1,80394045	5
0111101000	2,86217009	0,74333726	1,29465691	8
1000100100	3,21407625	1,47398113	0,61767615	0
1011000000	4,12903226	4,53277836	0,01664932	4
0001011110	0,55131965	2,09867476	11,8933962	4
0000101011	0,25219941	3,05480689	14,0460092	5



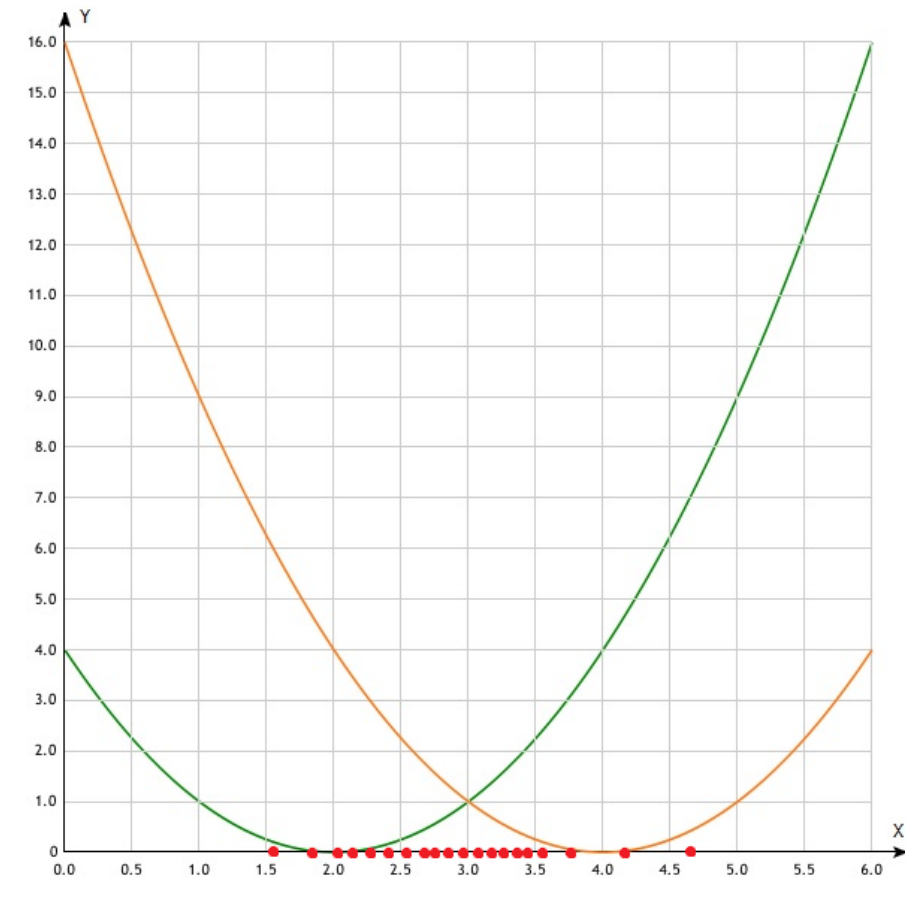
First intermediate iteration:

Chromosome	x	y1	y2	Rank
0011010100	1,24561232	0,569100772	7,586651	6
0101111011	2,22436152	0,050338092	3,152892	0
0001001000	0,42431577	2,482780793	12,78552	5
1011110100	4,43425699	5,925607093	0,188579	6
1100010111	4,64253766	6,983005285	0,412855	3
0001011100	0,54326482	2,122077385	11,94902	5
0011100100	1,34253677	0,432257899	7,062111	4
0111000011	2,64356971	0,414181972	1,839903	0
1000001100	3,07534912	1,15637573	0,854979	0
1011011010	4,28734506	5,231947424	0,082567	6
0110110000	2,53453457	0,285727207	2,147589	0
1110010011	5,37235252	11,37276152	1,883351	0
0111001101	2,72523564	0,525966734	1,625024	0
0010010100	0,86832768	1,28068224	9,807372	2
0110011000	2,39472955	0,155811418	2,576893	0
1101111000	5,21209738	10,31756958	1,46918	7
0111010010	2,73792608	0,5445349	1,592831	0
1010100011	3,95918721	3,838414524	0,001666	5
1100001001	4,55981751	6,552665685	0,313396	8
1000110001	3,29276735	1,671247421	0,500178	6



Second intermediate iteration:

Chromosome	x	y1	y2	Rank
0001111111	0,74562874	1,573447258	10,59093	4
0111000001	2,63541198	0,403748384	1,8621	0
0100000001	1,51264896	0,237511036	6,186915	3
1011110100	4,43425699	5,925607093	0,188579	4
1000110100	3,31256987	1,722839664	0,47256	0
0011011000	1,27263004	0,529067059	7,438547	5
0011100100	1,34253677	0,432257899	7,062111	5
0111011100	2,79632542	0,634134175	1,448832	0
0011101100	1,38532147	0,377829695	6,836544	4
0101101111	2,15765248	0,024854304	3,394244	0
0110110000	2,53453457	0,285727207	2,147589	6
1100101100	4,76569452	7,649066178	0,586288	7
0110001100	2,32654878	0,106634106	2,800439	0
0110101110	2,52546565	0,276114149	2,174252	0
1010001101	3,83549872	3,369055551	0,027061	0
1011100001	4,32548752	5,407892206	0,105942	4
0110100110	2,47598212	0,226558979	2,32263	0
1010100011	3,95918721	3,838414524	0,001666	0
0101001110	1,96325847	0,00134994	4,148316	4
1011101010	4,37869525	5,658191092	0,14341	3



Last iteration:

Chromosome	x	y1	y2	Rank
0001111111	2,74562874	0,555962218	1,573447	0
0111000001	2,63541198	0,403748384	1,8621	0
0100000001	2,51264896	0,262808956	2,212213	0
1011110100	3,43425699	2,057093113	0,320065	0
1000110100	3,31256987	1,722839664	0,47256	0
0011011000	2,27263004	0,074327139	2,983807	0
0011100100	2,34253677	0,117331439	2,747184	0
0111011100	2,79632542	0,634134175	1,448832	0
0011101100	2,38532147	0,148472635	2,607187	0
0101101111	2,15765248	0,024854304	3,394244	1
0110110000	2,53453457	0,285727207	2,147589	0
1100101100	2,76569452	0,586288098	1,52351	0
0110001100	2,32654878	0,106634106	2,800439	0
0110101110	2,52546565	0,276114149	2,174252	0
1010001101	3,83549872	3,369055551	0,027061	0
1011100001	3,32548752	1,756917166	0,454967	0
0110100110	2,47598212	0,226558979	2,32263	0
1010100011	3,95918721	3,838414524	0,001666	0
0101001110	2,96325847	0,92786688	1,074833	0
1011101010	3,77869525	3,163756792	0,048976	1

