Calbay, Franz Arvin 4CSB

Cunanan, Patrick Bryan GE-ELEC

Francisco, Angelica Prelims Period Project

Santos, Angel Luis

**Fixed - Point Method**

x = 1

|  |  |  |
| --- | --- | --- |
| 1 | 1 | 1.250000000000000 |
| 2 | 1.250000000000000 | 1.334839112200000 |
| 3 | 1.334839112200000 | 1.373246171500000 |
| 4 | 1.373246171500000 | 1.392156910600000 |
| 5 | 1.392156910600000 | 1.401811646300000 |
| 6 | 1.401811646300000 | 1.406827614600000 |
| 7 | 1.406827614600000 | 1.409456671600000 |
| 8 | 1.409456671600000 | 1.410840954600000 |
| 9 | 1.410840954600000 | 1.411571562700000 |
| 10 | 1.411571562700000 | 1.411957652400000 |
| 11 | 1.411957652400000 | 1.412161816200000 |
| 12 | 1.412161816200000 | 1.412269815500000 |
| 13 | 1.412269815500000 | 1.412326955900000 |
| 14 | 1.412326955900000 | 1.412357190700000 |
| 15 | 1.412357190700000 | 1.412373189800000 |
| 16 | 1.412373189800000 | 1.412381656100000 |
| 17 | 1.412381656100000 | 1.412386136300000 |
| 18 | 1.412386136300000 | 1.412388507200000 |
| 19 | 1.412388507200000 | 1.412389761800000 |
| 20 | 1.412389761800000 | 1.412390425700000 |
| 21 | 1.412390425700000 | 1.412390777100000 |
| 22 | 1.412390777100000 | 1.412390963000000 |
| 23 | 1.412390963000000 | 1.412391061400000 |
| 24 | 1.412391061400000 | 1.412391113500000 |
| 25 | 1.412391113500000 | 1.412391141100000 |
| 26 | 1.412391141100000 | 1.412391155700000 |
| 27 | 1.412391155700000 | 1.412391163400000 |
| 28 | 1.412391163400000 | 1.412391167500000 |
| 29 | 1.412391167500000 | 1.412391169600000 |
| 30 | 1.412391169600000 | 1.412391170700000 |
| 31 | 1.412391170700000 | 1.412391171300000 |
| 32 | 1.412391171300000 | 1.412391171600000 |
| 33 | 1.412391171600000 | 1.412391171800000 |
| 34 | 1.412391171800000 | 1.412391171900000 |
| 35 | 1.412391171900000 | 1.412391172000000 |
| **36** | **1.412391172000000** | **1.412391172000000** |

x = 2

|  |  |  |
| --- | --- | --- |
| 1 | 2 | 1.826713204900000 |
| 2 | 1.826713204900000 | 1.683590711000000 |
| 3 | 1.683590711000000 | 1.578387210400000 |
| 4 | 1.578387210400000 | 1.508725653300000 |
| 5 | 1.508725653300000 | 1.466246935200000 |
| 6 | 1.466246935200000 | 1.441793511100000 |
| 7 | 1.441793511100000 | 1.428220174100000 |
| 8 | 1.428220174100000 | 1.420845957500000 |
| 9 | 1.420845957500000 | 1.416887699000000 |
| 10 | 1.416887699000000 | 1.414777011700000 |
| 11 | 1.414777011700000 | 1.413655515800000 |
| 12 | 1.413655515800000 | 1.413060750900000 |
| 13 | 1.413060750900000 | 1.412745647200000 |
| 14 | 1.412745647200000 | 1.412578796300000 |
| 15 | 1.412578796300000 | 1.412490472100000 |
| 16 | 1.412490472100000 | 1.412443723800000 |
| 17 | 1.412443723800000 | 1.412418982800000 |
| 18 | 1.412418982800000 | 1.412405889500000 |
| 19 | 1.412405889500000 | 1.412398960400000 |
| 20 | 1.412398960400000 | 1.412395293600000 |
| 21 | 1.412395293600000 | 1.412393353100000 |
| 22 | 1.412393353100000 | 1.412392326200000 |
| 23 | 1.412392326200000 | 1.412391782800000 |
| 24 | 1.412391782800000 | 1.412391495200000 |
| 25 | 1.412391495200000 | 1.412391343000000 |
| 26 | 1.412391343000000 | 1.412391262500000 |
| 27 | 1.412391262500000 | 1.412391219900000 |
| 28 | 1.412391219900000 | 1.412391197400000 |
| 29 | 1.412391197400000 | 1.412391185500000 |
| 30 | 1.412391185500000 | 1.412391179200000 |
| 31 | 1.412391179200000 | 1.412391175800000 |
| 32 | 1.412391175800000 | 1.412391174000000 |
| 33 | 1.412391174000000 | 1.412391173100000 |
| 34 | 1.412391173100000 | 1.412391172600000 |
| 35 | 1.412391172600000 | 1.412391172300000 |
| 36 | 1.412391172300000 | 1.412391172200000 |
| 37 | 1.412391172200000 | 1.412391172100000 |
| **38** | **1.412391172100000** | **1.412391172100000** |

**Explanation:**

**Bisection Method**

a = 1, b = 1.5

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1 | 1.250000000000000 | 1.500000000000000 | 1.250000000000000 | 0.339356448700000 |
| 2 | 1.375000000000000 | 1.500000000000000 | 1.375000000000000 | 0.072171268900000 |
| 3 | 1.375000000000000 | 1.437500000000000 | 1.437500000000000 | -0.046499243700000 |
| 4 | 1.406250000000000 | 1.437500000000000 | 1.406250000000000 | 0.011612475500000 |
| 5 | 1.406250000000000 | 1.421875000000000 | 1.421875000000000 | -0.017747907500000 |
| 6 | 1.406250000000000 | 1.414062500000000 | 1.414062500000000 | -0.003144013400000 |
| 7 | 1.410156250000000 | 1.414062500000000 | 1.410156250000000 | 0.004215135600000 |
| 8 | 1.412109375000000 | 1.414062500000000 | 1.412109375000000 | 0.000530789800000 |
| 9 | 1.412109375000000 | 1.413085937500000 | 1.413085937500000 | -0.001307804300000 |
| 10 | 1.412109375000000 | 1.412597656250000 | 1.412597656250000 | -0.000388805400000 |
| 11 | 1.412353515625000 | 1.412597656250000 | 1.412353515625000 | 0.000070917700000 |
| 12 | 1.412353515625000 | 1.412475585937500 | 1.412475585937500 | -0.000158962500000 |
| 13 | 1.412353515625000 | 1.412414550781250 | 1.412414550781250 | -0.000044027100000 |
| 14 | 1.412384033203125 | 1.412414550781250 | 1.412384033203125 | 0.000013444200000 |
| 15 | 1.412384033203125 | 1.412399291992188 | 1.412399291992188 | -0.000015291700000 |
| 16 | 1.412384033203125 | 1.412391662597656 | 1.412391662597656 | -0.000000923900000 |
| 17 | 1.412387847900391 | 1.412391662597656 | 1.412387847900391 | 0.000006260100000 |
| 18 | 1.412389755249023 | 1.412391662597656 | 1.412389755249023 | 0.000002668100000 |
| 19 | 1.412390708923340 | 1.412391662597656 | 1.412390708923340 | 0.000000872100000 |
| 20 | 1.412390708923340 | 1.412391185760498 | 1.412391185760498 | -0.000000025900000 |
| 21 | 1.412390947341919 | 1.412391185760498 | 1.412390947341919 | 0.000000423100000 |
| 22 | 1.412391066551208 | 1.412391185760498 | 1.412391066551208 | 0.000000198600000 |
| 23 | 1.412391126155853 | 1.412391185760498 | 1.412391126155853 | 0.000000086400000 |
| 24 | 1.412391155958176 | 1.412391185760498 | 1.412391155958176 | 0.000000030300000 |
| 25 | 1.412391170859337 | 1.412391185760498 | 1.412391170859337 | 0.000000002200000 |
| 26 | 1.412391170859337 | 1.412391178309917 | 1.412391178309917 | -0.000000011800000 |
| 27 | 1.412391170859337 | 1.412391174584627 | 1.412391174584627 | -0.000000004800000 |
| 28 | 1.412391170859337 | 1.412391172721982 | 1.412391172721982 | -0.000000001300000 |
| 29 | 1.412391171790659 | 1.412391172721982 | 1.412391171790659 | 0.000000000400000 |
| 30 | 1.412391171790659 | 1.412391172256321 | 1.412391172256321 | -0.000000000400000 |
| 31 | 1.412391171790659 | 1.412391172023490 | 1.412391172023490 | 0 |
| 32 | 1.412391171907075 | 1.412391172023490 | 1.412391171907075 | 0.000000000200000 |
| 33 | 1.412391171965282 | 1.412391172023490 | 1.412391171965282 | 0.000000000100000 |
| **34** | **1.412391171994386** | **1.412391172023490** | **1.412391171994386** | **0.000000000100000** |

a = 1.4, b = 1.8

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1 | 1.400000000000000 | 1.600000000000000 | 1.600000000000000 | -0.310003629200000 |
| 2 | 1.400000000000000 | 1.500000000000000 | 1.500000000000000 | -0.155465108100000 |
| 3 | 1.400000000000000 | 1.450000000000000 | 1.450000000000000 | -0.069063556400000 |
| 4 | 1.400000000000000 | 1.425000000000000 | 1.425000000000000 | -0.023546813700000 |
| 5 | 1.400000000000000 | 1.412500000000000 | 1.412500000000000 | -0.000204934000000 |
| 6 | 1.406250000000000 | 1.412500000000000 | 1.406250000000000 | 0.011612475500000 |
| 7 | 1.409375000000000 | 1.412500000000000 | 1.409375000000000 | 0.005691546900000 |
| 8 | 1.410937500000000 | 1.412500000000000 | 1.410937500000000 | 0.002740251800000 |
| 9 | 1.411718750000000 | 1.412500000000000 | 1.411718750000000 | 0.001266895400000 |
| 10 | 1.412109375000000 | 1.412500000000000 | 1.412109375000000 | 0.000530789800000 |
| 11 | 1.412304687500000 | 1.412500000000000 | 1.412304687500000 | 0.000162880200000 |
| 12 | 1.412304687500000 | 1.412402343750000 | 1.412402343750000 | -0.000021038800000 |
| 13 | 1.412353515625000 | 1.412402343750000 | 1.412353515625000 | 0.000070917700000 |
| 14 | 1.412377929687500 | 1.412402343750000 | 1.412377929687500 | 0.000024938700000 |
| 15 | 1.412390136718750 | 1.412402343750000 | 1.412390136718750 | 0.000001949700000 |
| 16 | 1.412390136718750 | 1.412396240234375 | 1.412396240234375 | -0.000009544600000 |
| 17 | 1.412390136718750 | 1.412393188476562 | 1.412393188476562 | -0.000003797500000 |
| 18 | 1.412390136718750 | 1.412391662597656 | 1.412391662597656 | -0.000000923900000 |
| 19 | 1.412390899658203 | 1.412391662597656 | 1.412390899658203 | 0.000000512900000 |
| 20 | 1.412390899658203 | 1.412391281127929 | 1.412391281127929 | -0.000000205500000 |
| 21 | 1.412391090393066 | 1.412391281127929 | 1.412391090393066 | 0.000000153700000 |
| 22 | 1.412391090393066 | 1.412391185760498 | 1.412391185760498 | -0.000000025900000 |
| 23 | 1.412391138076782 | 1.412391185760498 | 1.412391138076782 | 0.000000063900000 |
| 24 | 1.412391161918640 | 1.412391185760498 | 1.412391161918640 | 0.000000019000000 |
| 25 | 1.412391161918640 | 1.412391173839569 | 1.412391173839569 | -0.000000003400000 |
| 26 | 1.412391167879104 | 1.412391173839569 | 1.412391167879104 | 0.000000007800000 |
| 27 | 1.412391170859336 | 1.412391173839569 | 1.412391170859336 | 0.000000002200000 |
| 28 | 1.412391170859336 | 1.412391172349452 | 1.412391172349452 | -0.000000000600000 |
| 29 | 1.412391171604394 | 1.412391172349452 | 1.412391171604394 | 0.000000000800000 |
| 30 | 1.412391171976923 | 1.412391172349452 | 1.412391171976923 | 0.000000000100000 |
| 31 | 1.412391171976923 | 1.412391172163188 | 1.412391172163188 | -0.000000000300000 |
| 32 | 1.412391171976923 | 1.412391172070055 | 1.412391172070055 | -0.000000000100000 |
| 33 | 1.412391171976923 | 1.412391172023489 | 1.412391172023489 | 0 |
| **34** | **1.412391171976923** | **1.412391172000206** | **1.412391172000206** | **0** |

**Explanation:**

**Newton - Raphson Method**

a = 1, b = 1.5

|  |  |  |
| --- | --- | --- |
| 1 | 1.250000000000000 | 1.397546282000000 |
| 2 | 1.397546282000000 | 1.412247252900000 |
| 3 | 1.412247252900000 | 1.412391158300000 |
| 4 | 1.412391158300000 | 1.412391172000000 |
| **5** | **1.412391172000000** | **1.412391172000000** |

a =1.5, b = 2

|  |  |  |
| --- | --- | --- |
| 1 | 1.750000000000000 | 1.286025264600000 |
| 2 | 1.286025264600000 | 1.403095799900000 |
| 3 | 1.403095799900000 | 1.412334392000000 |
| 4 | 1.412334392000000 | 1.412391169900000 |
| 5 | 1.412391169900000 | 1.412391172000000 |
| **6** | **1.412391172000000** | **1.412391172000000** |

**Explanation:**

**Secant Method**

a = 1, b = 1.5

|  |  |  |
| --- | --- | --- |
| 1 | 1 | 1.590616109100000 |
| 2 | 1.590616109100000 | 1.455537328400000 |
| 3 | 1.455537328400000 | 1.406534712300000 |
| 4 | 1.406534712300000 | 1.412562627900000 |
| 5 | 1.412562627900000 | 1.412391836700000 |
| 6 | 1.412391836700000 | 1.412391171900000 |
| 7 | 1.412391171900000 | 1.412391172000000 |
| **8** | **1.412391172000000** | **1.412391172000000** |

a = 1.5, b = 2

|  |  |  |
| --- | --- | --- |
| 1 | 1 | 1.590616109100000 |
| 2 | 1.590616109100000 | 1.455537328400000 |
| 3 | 1.455537328400000 | 1.406534712300000 |
| 4 | 1.406534712300000 | 1.412562627900000 |
| 5 | 1.412562627900000 | 1.412391836700000 |
| 6 | 1.412391836700000 | 1.412391171900000 |
| 7 | 1.412391171900000 | 1.412391172000000 |
| **8** | **1.412391172000000** | **1.412391172000000** |

**Explanation:**