MIE334: Numerical Methods **Assignment 3**

Due: **March 25th**, **11:59 pm**, 2021

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | -0.7805 | = | 31.0589 |  |  | 4.4763 |  |  | 0.8127 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |
|  | 6 | 29 | 36 | 174 | 841 | 211.570248 | 6.88590081 |
|  | 7 | 21 | 49 | 147 | 441 | 42.8429752 | 21.1177012 |
|  | 11 | 29 | 121 | 319 | 841 | 211.570248 | 42.5965076 |
|  | 15 | 14 | 225 | 210 | 196 | 0.20661157 | 28.637482 |
|  | 17 | 21 | 289 | 357 | 441 | 42.8429752 | 10.3015322 |
|  | 21 | 15 | 441 | 315 | 225 | 0.29752066 | 0.10995856 |
|  | 23 | 7 | 529 | 161 | 49 | 55.5702479 | 37.3003348 |
|  | 29 | 7 | 841 | 203 | 49 | 55.5702479 | 2.02891536 |
|  | 29 | 13 | 841 | 377 | 169 | 2.11570248 | 20.9361154 |
|  | 37 | 0 | 1369 | 0 | 0 | 208.933884 | 4.75414416 |
|  | 39 | 3 | 1521 | 117 | 9 | 131.206612 | 5.66725636 |
|  | 234 | 159 | 6262 | 2380 | 3261 | 962.727273 | 180.335848 |

**Calculations and plot:**

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Adding the point (x,y)=(10,10) would be erroneous, as it is far below the regression line and thus would not be a good fit within our current measured data.

**(2)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
|  | 300 | 846.3 | 0.9840 | -0.00112 | 1.86667E-06 |
|  | 350 | 895.5 | 0.8720 | -0.00084 |  |
|  | 400 | 939.1 | 0.7880 |  |  |
|  | 450 | 978.5 |  |  |  |

Answer: 922.2424 J/kgK

**Calculations:**

**(3)**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | -0.4149 |  | 4.6331 |  | -8.4519 |  |  | 0.2484 |  |  | 0.9757 |

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|  |  |  |  |  |  |  |  |  |
| 3 | 1.6 | 2.0736 | 0.0128 | 9 | 27 | 81 | 4.8 | 14.4 |
| 4 | 3.6 | 0.3136 | 0.0249 | 16 | 64 | 256 | 14.4 | 57.6 |
| 5 | 4.4 | 1.8496 | 0.0035 | 25 | 125 | 625 | 22 | 110 |
| 7 | 3.4 | 0.1296 | 0.0624 | 49 | 343 | 2401 | 23.8 | 166.6 |
| 8 | 2.2 | 0.7056 | 0.0198 | 64 | 512 | 4096 | 17.6 | 140.8 |
| 27 | 15.2 | 5.072 | 0.1234 | 163 | 1071 | 7459 | 82.6 | 489.4 |

**Calculations:**