Nomenclature

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|  | the heat loss from the water to the air |
|  | the heat loss from the water to the man in the bathtub |
|  | the heat loss from the water to the bathtub |
|  | the heat absorption from the hot water |
| H | the height of the man |
| W | the weight of the man |
|  | the area of the man |
|  | the volume of the man |
|  | the radius of the head |
|  | the radius of the neck |
|  | the area of the head |
|  | the contracting area between the man and the bathtub |
|  | the contracting area between the man and the water |
|  | the volume of water in the bathtub |
|  | the volume of the bathtub |
|  | the contracting area between water and air |
|  | the contracting area between water and the bathtub |
|  | the contracting area between tub and the bathtub |
|  | the convection heat transfer coefficient between the water and air |
|  | the temperature of the water in the bathtub |
|  | the temperature of air |
|  | the heat flux between water and air |
|  | the convective heat transfer rate between the water and air |
| T | time |
|  | the convection heat transfer coefficient between water and people |
|  | the temperature of the water in the bathtub |
|  | the temperature of people |
|  | the heat flux between water and the man in the bathtub |
|  | the convective heat transfer rate between the water and the man |
|  | the temperature of inner wall of the bathtub |
|  | the temperature of inner outer wall of the bathtub |
| λ | heat conductivity coefficient of the bathtub wall |
| *δ* | the thickness of the bathtub wall |
|  | heat flux of the wall of the bathtub |
|  | the heat absorption |
|  | the heat loss |
| *c* | the specific heat capacity of water |
| *m* | the mass of water flowing into the bathtub |
|  | the temperature of the water in the bathtub |
|  | the temperature of the hot water |
| *v* | the water speed of the faucet |
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|  | the sum of lateral area and the under surface area |
|  | the upper surface area of the bathtub |
|  | the volume of the bathtub |
|  | he lowest water speed of 7 shapes |