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# By submitting this assignment, I agree to the following:
#   "Aggies do not lie, cheat, or steal, or tolerate those who do."
#   "I have not given or received any unauthorized aid on this assignment."
#
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#Section: 562
#Assignment Boiling Curve
#Date 09/30/22

Variables:
#For point A
xa = 1.3
ya = 1000
#For point B
xb = 5
yb = 7000
#For point C
xc = 30
yc = 1.5*10**6
#For point D
xd = 120
yd = 2.5*10**4
#For point E
xe = 1200
ye = 1.5*10**6

#The initial x vals
X0
Y0
#Slope
M
#Calculated x an y vals
X
y

#Slopes between the points
ma  = log (yb/ya)/ log (xb/xa)
mb = log (yc/yb)/ log (xc/xb)
mc = log (yd/yc) / log (xd / xc)
md = log (yc/yd)/ log(xe / xd)


#First get the user input for excess
#Btwn A and B
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If it is greater than xa and less than xb
        X0 = xa
        Y0 = ya
        m = ma
        x = excess
        y = y0 * (x/x0) ** m
Elif between xb and xc
   x0 = xb
   y0 = yb
   m = mb
   x = excess
   y =  y0 * (x/x0) ** m
#Between C and D - Roughly a negative
Elif between xc and xd:
    X0 = xc
    Y0 = yc
    m = mc
    x = excess
    y = y0 * (x/x0) ** m
#Between D and E - upward linear curve
Elif between xd and xe:
   x0 = xd
   y0 = yd
   m = md
   x = excess
   y =  y0 * (x/x0) ** m
```

Test cases

Input: 45
Output: 452914

Input:-3
Output: na

Input: 15.8
Output: 219754

Input: 76

Output: 96340

Input: -1.2
Output: NA

Input: 34
Output: 1036451

Input: 7.4
Output: 22653

Input: 73
Output: 108509

Input: 2.4
Output: 2425

Input: -9,76
Output: NA