Previous JEE question 6

For one mole of a van der Waal's gas when $b = 0$ and $T = 300$ K, the PV vs, 1/V plot is shown below. The value of the van der Waal's constant a (atm. liter^2 mol^{-2}) is :

(2012)

(a) 1.0
(b) 1.5

(c) 4.5
(d) 3.0

(c)

$$\left(P + \frac{a}{V^2}\right)(V) = RT$$

$PV + a/V = RT;\ PV = RT - a(V)$

$y = RT - a(x)$

So, slope $= a = \dfrac{21.6 - 20.1}{3 - 2} = \dfrac{1.5}{1} = 1.5$