9)

$$4xyz - a^2x + b^2y + c^2z = abc.$$

$$4 - \left(\frac{a^2}{yz} + \frac{b^2}{xz} + \frac{c^2}{xy}\right) = \frac{abc}{xyz}.$$

$$\frac{a^2}{yz} + \frac{b^2}{xz} + \frac{c^2}{xy} \geqslant 3\sqrt[3]{\frac{a^2b^2c^2}{x^2y^2z^2}}.$$

$$4 - \left(\frac{a^2}{yz} + \frac{b^2}{xz} + \frac{c^2}{xy}\right) \leq 4 - 3\cdot\sqrt[3]{\frac{a^2b^2c^2}{x^2y^2z^2}}.$$

$$\frac{abc}{xyz} = k.$$

$$k \leq 4 - 3\cdot\sqrt[3]{k^2}.$$

$\cancel{xyz \geq abc}$

$\cancel{xyz = abc}$

$$3\cdot\sqrt[3]{k^2} \leq 4 - k.$$

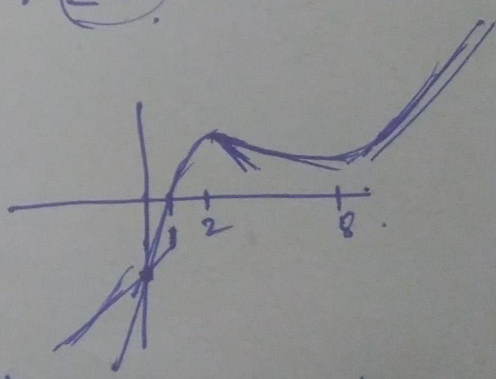
$$27\cdot k^2 \leq 64 - 48k + 12k^2 - k^3$$

$$\Rightarrow k^3 + 15k^2 + 48k - 64 \leq 0. \qquad k \leq 1.$$

$3k^2 - 30k + 48$

$k^2 - 10k + 16.$

$(k-8)(k-2) \rightarrow$



$k \leq 1$

$\cancel{512 + 960 + 384 - 64}$

$\cancel{320}$

$\cancel{\frac{abc}{xyz} \leq 1}$

$$\frac{abc}{xyz} \leq 1$$

$abc \le xyz$

$a+b+c = x+y+z = l.$

$$\left.\begin{aligned} \frac{l}{3} &\geq \sqrt[3]{abc}. \\ \frac{l}{3} &\geq \sqrt[3]{xyz}. \end{aligned}\right\}$$

<u>and</u>.

$abc \le xyz$