Given a Graph weighted G writing a single function to sum over the edges uv and find

The function takes a weighted graph G

Let

$$cu = (Maximum\ Degree\ of\ the\ graph\ G) \ - \ degree(u) + 1)$$

$$cv = (Maximum\ Degree\ of\ the\ graph\ G) \ - \ degree(v) + 1)$$

Let $n = number\ of\ vertices\ of\ G$

$m = number\ of\ Edges\ of\ G$

$$A[1] = \sum_{uv \in E(G)} (cu + cv)$$

$$A[2] = \sum_{uv \in E(G)} cu * cv$$

$$A[3] = \sum_{uv \in E(G)} (cu + cv\ )^2$$

$$A[4] = \sum_{uv \in E(G)} (cu * cv)^2$$

$$A[5] = \sum_{uv \in E(G)} \sqrt{\frac{cu + cv - 2}{cu * cv}}$$

$$A[6] = \sum_{uv \in E(G)} \frac{2 * \sqrt{cu * cv}}{[cu + cv]}$$

$$A[7] = \big(2 * m(n-1)\big) - A[1]$$

$$A[8] = (2 * m^2) - \frac{1}{2} * A[1] - A[2]$$

$$A[9] = \sum_{uv \in E(G)} c_u^2 + c_v^2$$

$$A[10] = \left(\frac{m}{m - n + 2}\right) * \sum_{uv \in E(G)} \frac{1}{\sqrt{cu * cv}}$$

$$A[11] = \prod_{uv \in E(G)} (cu + cv)$$

$$A[12] = \prod_{uv \in E(G)} (cu * cv)$$

$$A[13] = \prod_{uv \in E(G)} \left(\frac{cu + cv}{cu \times cv}\right)$$

$$A[14] = \prod_{uv \in E(G)} \left(\frac{cu \times cv}{cu + cv}\right)$$

$$A[15] = \prod_{uv \in E(G)} \big((cu + cv) \times (cu * cv)\big)$$