Darcy Weisbach equation

$$\overline{U} = \sqrt{\frac{8gRS}{f}}$$

$$\left[L\,T^{-1}\right] = \left(\frac{[1]\left[L\,T^{-2}\right]\frac{[L^2]}{[L]}[1]}{[1]}\right)^{\frac{1}{2}}$$

$$\left[L\,T^{-1}\right] = \left(\left[L\,T^{-2}\right]\frac{[L^2]}{[L]}\right)^{\frac{1}{2}}$$

$$\left[L\,T^{-1}\right] = \left(\left[L^2\,T^{-2}\right]\right)^{\frac{1}{2}}$$

$$\left[L\,T^{-1}\right] = \left[L\,T^{-1}\right]$$

Manning's equation

$$\overline{U} = \frac{k}{n}R^{\frac{2}{3}}S^{\frac{1}{2}}$$

$$\left[L\,T^{-1}\right] = \frac{[1]}{[1]}\left(\frac{[L^2]}{[L]}\right)^{\frac{2}{3}}([1])^{\frac{1}{2}}$$

$$\left[L\,T^{-1}\right] = \left(\frac{[L^2]}{[L]}\right)^{\frac{2}{3}}$$

$$\left[L\,T^{-1}\right] = \left[L^{\frac{2}{3}}\right] = \frac{[L^2]}{[L^3]}$$