Air resistance = R_{air}

Rolling Resistance = Rroll

Braking (longitudinal friction) = R_{brake}

There are also curve resistance ,Grade and maybe others.

$$R_{air}(v) = \left(\frac{C_d \rho_{air} A}{2}\right) v^2$$

$$R_{roll}(v) = C_{rl} mg$$

$$R_{brake}(v) = m(\eta \mu_k g)$$

$$R(v) = R_{air} + R_{brake} + R_{roll}$$

$$R(v) = \left(\frac{C_d \rho_{air} A}{2}\right) v^2 + m\eta\mu_k g + (C_{rs} + C_{rv} v^2) mg$$

$$R(v) = \left(C_{rv} mg + \frac{C_d \rho_{air} A}{2}\right) v^2 + (\eta\mu_k + C_{rs}) mg$$

$$a = a(v,m) = \left(gC_{rv} + \frac{C_d \rho_{air} A}{2m}\right) v^2 + g(\eta\mu_k + C_{rs})$$

So acceleration :a is not constant

$$RdS = vdp = vd(mv) = mvdv \, , m = constant$$

$$\int_{S_v}^{S_u} dS = m \int_{v}^{u} \frac{vdv}{R}$$

In general $\left(\frac{C_d \rho_{air} A}{2m}\right) v^2$ has just little effects . So acceleration can be considered as constant and equation of motion is reduced in simple or basic form which suitable for engineering .

$$S = S_{react} + S_{braking} = ut_{react} + \frac{(v^2 - u^2)}{2a}$$

But if you want more precision or difficulty . You may take $\mu_k = \mu_k(v)$ for example

$$\mu_k = \mu_k(v) = \mu_o - \lambda v$$