and thus the slope, m, gives $\Delta\mu$, and R is given by the intercept as

$$R = m(f_{-i} - f_{-0}) = \Delta\mu(f_{-i} - f_{-0}) \tag{14.27}$$

where f_{-i} is the value of f_{-} at the intercept.

Equation 14.27 has interesting implications in helping to quantify the conditions for which eq. 14.26 is valid. That is, t must be sufficiently small that

$$\Delta\mu >> (f_{-0}\,\Delta\mu + R)e^{\,\Delta\mu t}$$

when $\Delta\mu >> R$. Thus,

$$\Delta\mu >> (f_{-0}\Delta\mu + \Delta\mu f_{-i} - \Delta\mu f_{-0})e^{\Delta\mu t} \tag{14.28}$$

or

$$1 >> f_{-i}\, e^{\Delta\mu\, t} \tag{14.29}$$

or

$$0 >> \ln f_{-i} + \Delta\mu t \tag{14.30}$$

or

$$t << \frac{-\ln f_{-i}}{\Delta\mu} \tag{14.31}$$

The analysis also assumes that $\Delta\mu t > 1$; thus, the linear region suitable for use for case 1 situations is

$$\frac{1}{m} < t < \frac{-\ln f_{-i}}{m} \tag{14.32}$$

In case 2, for $t > 1/(\Delta\mu + R)$,

$$f_{-} \approx 1 - (1 + \Delta\mu / R)e^{-(\Delta\mu + R)t} \tag{14.33a}$$

$$\ln f_{+} = \ln(1 - f_{-}) = \ln(1 + \Delta\mu / R) - (\Delta\mu + R)t \tag{14.33b}$$

in which case the intercept is used to evaluate f_{+i} and the slope $m = -(\Delta\mu + R)$:

$$\Delta\mu = m(f_{+i} - 1) = mf_{-i} \tag{14.34}$$

$$R = -mf_{+i} = -m(1 - f_{-i}) \tag{14.35}$$

In case 3, we note that f_{-} assumes a constant value between 0 and 1, which we denote as f_{-}^{*}. Equation 14.25 yields f_{-}^{*} by allowing $t \to \infty$, or

$$f_{-}^{*} \approx R / \Delta\mu \tag{14.36}$$

A plot of $\ln(f_{-}^{*} - f_{-})$ versus time will give a slope, m, such that

$$m = R - |\Delta\mu| \tag{14.37}$$

Equations 14.36 and 14.37 can be combined to give