List of selected formulae

Present values of annuities-certain:

$$\ddot{a}_{\overline{n}|} = \frac{1-v^n}{1-v} \qquad a_{\overline{n}|} = v\ddot{a}_{\overline{n}|}$$

$$\ddot{a}^{(p)}_{\overline{n}|} = \frac{1}{p}\left[\frac{1-v^n}{1-v^{\frac{1}{p}}}\right] \qquad a^{(p)}_{\overline{n}|} = v^{\frac{1}{p}}\ddot{a}^{(p)}_{\overline{n}|}.$$

Expected present values of life annuities:

$$\ddot{a}_x = \frac{N_x}{D_x} \qquad \ddot{a}_{x:\overline{n}|} = \frac{N_x - N_{x+n}}{D_x} \qquad a_x = \ddot{a}_x - 1$$

$$\ddot{a}^{(p)}_x \approx \ddot{a}_x - \frac{p-1}{2p} \qquad a^{(p)}_x \approx a_x + \frac{p-1}{2p} \qquad a^{(p)}_x = \ddot{a}^{(p)}_x - \frac{1}{p}$$

Conversion relationships:

$$\bar{A}_x = 1 - \delta\bar{a}_x$$

$$A_x = 1 - d\ddot{a}_x$$

$$A^{(p)}_x = 1 - d^{(p)}\ddot{a}^{(p)}_x$$

$$A^{(p)}_{x:\overline{n}|} = 1 - d^{(p)}\ddot{a}^{(p)}_{x:\overline{n}|}$$