Table 3: Rating system

★★★★★	Essential—appears repeatedly on every exam
★★★★	Important—appears on every exam
★★★	Average importance—regularly appears on exams
★★	Not so important—appears occasionally on exams, or easy to derive as needed
★	Obscure—on syllabus, but unlikely to appear on exam. Sometimes this indicates a formula not covered by all the reading options. No released exam uses this formula or concept, and students have never reported a question from an unreleased exam requiring this formula or concept.

★★★★★

Definition of $S(x)$

$$S(x) = \Pr(X > x)$$

★★★★★

Two general formulas for $H(x)$

$$H(x) = \int_{-\infty}^{x} h(t)\,\mathrm{d}t = -\ln S(x)$$

★★★

Two general formulas for $h(x)$

3F

$$h(x) = \frac{f(x)}{S(x)} = -\frac{\mathrm{d}\ln S(x)}{\mathrm{d}x}$$

★★★

Formula for third central moment in terms of third raw moment

4F

$$\mu_3 = \mu_3' - 3\mu_2'\mu + 2\mu^3$$

★★★★★

Formula for second central moment in terms of second raw moment

$$\sigma^2 = \mu_2' - \mu^2$$

★★★★★

$\mathbf{E}[X]$ *in terms of* $S(x)$, *assuming* $\Pr(X < 0) = 0$

$$\mathbf{E}[X] = \int_0^\infty S(x)\,\mathrm{d}x$$

★★

$\mathbf{E}[(X \wedge u)^k]$ *expressed in terms of an integral with* $f(x)$, *assuming* $\Pr(X < 0) = 0$

46F

$$\mathbf{E}\left[(X \wedge u)^k\right] = \int_0^u x^k f(x)\,\mathrm{d}x + u^k\Big(1 - F(u)\Big)$$

★★★★

$\mathbf{E}[X \wedge u]$ *expressed in terms of an integral with* $f(x)$*, assuming* $\Pr(X < 0) = 0$

47F

$$\mathbf{E}[X \wedge u] = \int_0^u x f(x)\,\mathrm{d}x + u\bigl(1 - F(u)\bigr)$$

★

$\mathbf{E}[(X \wedge u)^k]$ *in terms of* $S(x)$, *assuming* $\Pr(X < 0) = 0$

$$\mathbf{E}\left[(X \wedge u)^k\right] = \int_0^u k x^{k-1} S(x)\,\mathrm{d}x$$

★★★★

$\mathbf{E}[X \wedge u]$ *in terms of* $S(x)$*, assuming* $\Pr(X < 0) = 0$

$$\mathbf{E}[X \wedge u] = \int_0^u S(x)\mathrm{d}x$$

★★★★★

Nelson-Åalen Estimator

$$\hat{H}(t) = \sum_{i=1}^{j-1} \frac{s_i}{r_i}, \qquad y_{j-1} \le t < y_j$$

★★★

Recursive version of Nelson-Åalen estimator

$$\hat{H}(y_j) = \hat{H}(y_{j-1}) + \frac{s_j}{r_j}$$

★★★★★

Greenwood formula

$$\widehat{\mathrm{Var}}\left(\hat{S}(t)\right) = \hat{S}(t)^2 \sum_{y_j \le t} \frac{s_j}{r_j(r_j - s_j)}$$

★★★★★

Formula for variance of Nelson-Åalen estimator

$$\widehat{\mathrm{Var}}\Big(\hat{H}(t)\Big) = \sum_{y_j \le t} \frac{s_j}{r_j^2}$$

★★★

Recursive version of formula for variance of Nelson-Åalen estimator

$$\widehat{\mathrm{Var}}\left(\hat{H}(y_j)\right) = \widehat{\mathrm{Var}}\left(\hat{H}(y_{j-1})\right) + \frac{s_j}{r_j^2}$$