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! For an efficient use of these tables, first read `HowTo.pdf`.

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**T3.52B.** Integrands involving logarithm functions and powers of $(a+b\,x)$ on the intervals $(1,\infty)$ and $(y,\infty)$.

1. $$\int_1^\infty (x-1)^{p-1}\ln x\,dx = \frac{\pi}{p}\csc \pi p, \quad -1 < p < 0.$$

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2. $$\int_1^\infty \frac{dx}{x^2(\ln p - \ln x)} = \frac{1}{p}\,\mathrm{li}(p).$$

3. $$\int_y^\infty \frac{(x-y)^{\mu-1}\ln x\,dx}{x^\lambda} = y^{\mu-\lambda}B\left(\lambda-\mu,\,\mu\right)\left[\ln y + \psi(\lambda) - \psi(\lambda-\mu)\right],$$
$$0 < \Re\{\mu\} < \Re\{\lambda\}.$$

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