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

T2.30B. Integrands with the fourth roots of polynomials in the denominator, and their product with rational functions on the interval $(1, y)$.

Notation used: $\gamma = \arccos \dfrac{1 - \sqrt{y^2 - 1}}{1 + \sqrt{y^2 - 1}}$.

1. $$\int_1^y \frac{dx}{\left(x^2 - 1\right)^{1/4}} = F\left(\gamma, \frac{1}{\sqrt{2}}\right) - 2E\left(\gamma, \frac{1}{\sqrt{2}}\right) + \frac{2y\left(y^2 - 1\right)^{1/4}}{1 + \sqrt{y^2 - 1}}, \quad y > 1.$$

2. $$\int_1^y \frac{dx}{x^2\left(x^2 - 1\right)^{1/4}} = E\left(\gamma, \frac{1}{\sqrt{2}}\right) - \frac{1}{2}F\left(\gamma, \frac{1}{\sqrt{2}}\right) - \frac{1 - \sqrt{y^2 - 1}}{1 + \sqrt{y^2 - 1}}\,\frac{\sqrt{y^2 - 1}}{y}, \quad y > 1.$$

3. $$\int_1^y \frac{dx}{\left(x^2 - 1\right)^{3/4}} = F\left(\gamma, \frac{1}{\sqrt{2}}\right), \quad y > 1.$$

4. $$\int_1^y \frac{dx}{\left(x^2 + 2\sqrt{x^2 - 1}\right)\left(x^2 - 1\right)^{1/4}} = \frac{1}{2}\left[F\left(\gamma, \frac{1}{\sqrt{2}}\right) - E\left(\gamma, \frac{1}{\sqrt{2}}\right)\right], \quad y > 1.$$

5. $$\int_1^y \frac{x^2\,dx}{\left(x^2 + 2\sqrt{x^2 - 1}\right)\left(x^2 - 1\right)^{3/4}} = E\left(\gamma, \frac{1}{\sqrt{2}}\right), \quad y > 1.$$