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

**T3.08A.** Integrands of the form $\dfrac{1}{\sqrt{x^n\,(x-1)^n\,(x^2-x+1)^m}}$, $n = 1, 3, 5$; $m = 1, 3$, on the intervals $(y, \infty)$.

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

1. $$\int_y^\infty \frac{dx}{\sqrt{x(x-1)(x^2-x+1)}} = F\left(\alpha,\, \frac{\sqrt{3}}{2}\right), \quad y \ge 1.$$

2. $$\int_y^\infty \frac{dx}{\sqrt{x^3(x-1)^3(x^2-x+1)}} = \frac{2(2y-1)}{\sqrt{y(y-1)(y^2-y+1)}} - 4E\left(\alpha,\, \frac{\sqrt{3}}{2}\right), \quad y > 1.$$

3. $$\int_y^\infty \frac{(2x-1)^2\,dx}{\sqrt{x^3(x-1)^3(x^2-x+1)}} = 4\left[F\left(\alpha,\, \frac{\sqrt{3}}{2}\right) - E\left(\alpha,\, \frac{\sqrt{3}}{2}\right) + \frac{2y-1}{2\sqrt{y\,(y-1)\,(y^2-y-1)}}\right],$$
$$y > 1.$$

4. $$\int_y^\infty \frac{dx}{\sqrt{x(x-1)(x^2-x+1)^3}} = \frac{4}{3}\left[F\left(\alpha,\, \frac{\sqrt{3}}{2}\right) - E\left(\alpha,\, \frac{\sqrt{3}}{2}\right)\right], \quad y \ge 1.$$

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

6. $$\int_y^\infty \sqrt{\frac{x(x-1)}{(x^2-x+1)^3}}\,dx = \frac{4}{3}E\left(\alpha,\, \frac{\sqrt{3}}{2}\right) - \frac{1}{3}F\left(\alpha,\, \frac{\sqrt{3}}{2}\right), \quad y > 1.$$

7. $$\int_y^\infty \frac{dx}{(2x-1)^2}\sqrt{\frac{x(x-1)}{x^2-x+1}} = \frac{1}{3}\left[F\left(\alpha,\, \frac{\sqrt{3}}{2}\right) - E\left(\alpha,\, \frac{\sqrt{3}}{2}\right)\right] + \frac{1}{2(2y-1)}\sqrt{\frac{y(y-1)}{y^2-y+1}},$$
$$y > 1.$$

8. $$\int_y^\infty \frac{dx}{(2x-1)^2}\sqrt{\frac{x^2-x+1}{x(x-1)}} = E\left(\alpha,\, \frac{\sqrt{3}}{2}\right) - \frac{3}{2(2y-1)}\sqrt{\frac{y(y-1)}{y^2-y+1}}, \quad y>1.$$

9. $$\int_y^\infty \frac{dx}{(2x-1)^2\sqrt{x(x-1)(x^2-x+1)}} = \frac{4}{3}E\left(\alpha,\, \frac{\sqrt{3}}{2}\right) - \frac{1}{3}F\left(\alpha,\, \frac{\sqrt{3}}{2}\right) - \frac{2}{2y-1}\sqrt{\frac{y(y-1)}{y^2-y+1}}, \quad y>1.$$

10. $$\int_y^\infty \frac{dx}{\sqrt{x^5(x-1)^5(x^2-x+1)}} = \frac{40}{3}E\left(\alpha,\, \frac{\sqrt{3}}{2}\right) - \frac{4}{3}F\left(\alpha,\, \frac{\sqrt{3}}{2}\right) - \frac{2(2y-1)(9y^2-9y-1)}{3\sqrt{y^3(y-1)^3(y^2-y+1)}}, \quad y>1.$$

11. $$\int_y^\infty \frac{dx}{\sqrt{x(x-1)(x^2-x+1)^5}} = \frac{44}{27}F\left(\alpha,\, \frac{\sqrt{3}}{2}\right) - \frac{56}{27}E\left(\alpha,\, \frac{\sqrt{3}}{2}\right) + \frac{2(2y-1)\sqrt{y(y-1)}}{9\sqrt{(y^2-y+1)^3}}, \quad y>1.$$

12. $$\int_y^\infty \frac{dx}{(2x-1)^4\sqrt{x(x-1)(x^2-x+1)}} = \frac{16}{27}E\left(\alpha,\, \frac{\sqrt{3}}{2}\right) - \frac{1}{27}F\left(\alpha,\, \frac{\sqrt{3}}{2}\right) - \frac{8(5y^2-5y+2)}{9(2y-1)^3}\sqrt{\frac{y(y-1)}{y^2-y+1}}, \quad y>1.$$