

! For an efficient use of these tables, first read [HowTo.pdf](#).

T2.09B. Integrands of the form $\sqrt{\frac{\pm(a-x)}{(b-x)^n(c-x)}}$, $\sqrt{\frac{\pm(b-x)}{(a-x)^n(c-x)}}$ and $\sqrt{\frac{\pm(c-x)}{(a-x)^n(b-x)}}$ for $n = 1, 3$, on the intervals (y, b) and (b, y) .

Notation used: $\delta = \arcsin \sqrt{\frac{(a-c)(b-y)}{(b-c)(a-y)}}$, $\kappa = \arcsin \sqrt{\frac{(a-c)(y-b)}{(a-b)(y-c)}}$,

$$p = \sqrt{\frac{a-b}{a-c}}, \quad q = \sqrt{\frac{b-c}{a-c}}.$$

$$1. \int_y^b \sqrt{\frac{a-x}{(b-x)(x-c)}} dx = 2\sqrt{a-c} E(\delta, q) - 2\sqrt{\frac{(b-y)(y-c)}{a-y}} \quad a > b > y \geq c.$$

$$2. \int_b^y \sqrt{\frac{a-x}{(x-b)(x-c)}} dx = 2\sqrt{a-c} [F(\kappa, p) - E(\kappa, p)] + 2\sqrt{\frac{(a-y)(y-b)}{y-c}}, \quad a \geq y > b > c.$$

$$3. \int_y^b \sqrt{\frac{b-x}{(a-x)(x-c)}} dx = 2\sqrt{a-c} E(\delta, q) - \frac{2(a-b)}{\sqrt{a-c}} F(\delta, q) - 2\sqrt{\frac{(b-y)(y-c)}{a-y}}, \quad a > b > y \geq c.$$

$$4. \int_b^y \sqrt{\frac{x-b}{(a-x)(x-c)}} dx = 2\sqrt{a-c} E(\kappa, p) - \frac{2(b-c)}{\sqrt{a-c}} F(\kappa, p) - 2\sqrt{\frac{(a-y)(y-b)}{y-c}}, \quad a \geq y > b > c.$$

$$5. \int_y^b \sqrt{\frac{x-c}{(a-x)(b-x)}} dx = 2\sqrt{a-c} [F(\delta, q) - E(\delta, q)] + 2\sqrt{\frac{(b-y)(y-c)}{a-y}}, \quad a > b > y \geq c.$$

$$6. \int_b^y \sqrt{\frac{x-c}{(a-x)(x-b)}} dx = 2\sqrt{a-c} E(\kappa, p) - 2\sqrt{\frac{(a-y)(y-b)}{y-c}}, \quad a \geq y > b > c.$$

$$7. \int_y^b \sqrt{\frac{a-x}{(b-x)(x-c)^3}} dx = 2 \frac{a-b}{(b-c)\sqrt{a-c}} F(\delta, q) - \frac{2\sqrt{a-c}}{b-c} E(\delta, q) \\ + 2 \frac{a-c}{b-c} \sqrt{\frac{b-y}{(a-y)(y-c)}}, \quad a > b > y > c.$$

$$8. \int_b^y \sqrt{\frac{a-x}{(x-b)(x-c)^3}} dx = \frac{2\sqrt{a-c}}{b-c} E(\kappa, p) - \frac{2}{\sqrt{a-c}} F(\kappa, p), \quad a \geq y > b > c.$$

$$9. \int_y^b \sqrt{\frac{b-x}{(a-x)^3(x-c)}} dx = \frac{2}{\sqrt{a-c}} [F(\delta, q) - E(\delta, q)], \quad a > b > y \geq c.$$

$$10. \int_b^y \sqrt{\frac{x-b}{(a-x)^3(x-c)}} dx = -\frac{2}{\sqrt{a-c}} E(\kappa, p) + 2\sqrt{\frac{y-b}{(a-y)(y-c)}}, \quad a > y > b > c.$$

$$11. \int_y^b \sqrt{\frac{b-x}{(a-x)(x-c)^3}} dx = -\frac{2}{\sqrt{a-c}} E(\delta, q) + 2\sqrt{\frac{b-y}{(a-y)(y-c)}}, \quad a > b > y > c.$$

$$12. \int_b^y \sqrt{\frac{x-b}{(a-x)(x-c)^3}} dx = \frac{2}{\sqrt{a-c}} [F(\kappa, p) - E(\kappa, p)], \quad a \geq y > b > c.$$

$$13. \int_y^b \sqrt{\frac{x-c}{(a-x)^3(b-x)}} dx = \frac{2\sqrt{a-c}}{a-b} E(\delta, q) - \frac{2}{\sqrt{a-c}} F(\delta, q), \quad a > b > y \geq c.$$

$$14. \int_b^y \sqrt{\frac{x-c}{(a-x)^3(x-b)}} dx = \frac{2(b-c)}{(a-b)\sqrt{a-c}} F(\kappa, p) - \frac{2\sqrt{a-c}}{a-b} E(\kappa, p) \\ + 2 \frac{a-c}{a-b} \sqrt{\frac{y-b}{(a-y)(y-c)}}, \quad a > y > b > c.$$
