

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

**T2.10A.** Integrands of the form  $\sqrt{\pm \frac{(a-x)(b-x)}{(c-x)}}$ ,  $\sqrt{\pm \frac{(b-x)(c-x)}{(a-x)}}$  and  $\sqrt{\pm \frac{(a-x)(c-x)}{(b-x)}}$  on the intervals  $(y, a)$  and  $(a, y)$ .

Notation used:  $\lambda = \arcsin \sqrt{\frac{a-y}{a-b}}$ ,  $\mu = \arcsin \sqrt{\frac{y-a}{y-b}}$ ,  $p = \sqrt{\frac{a-b}{a-c}}$ ,  $q = \sqrt{\frac{b-c}{a-c}}$ .

$$1. \int_y^a \sqrt{\frac{(x-b)(x-c)}{a-x}} dx = \frac{2}{3} \sqrt{a-c} [(2a-b-c)E(\lambda, p) - (b-c)F(\lambda, p)] \\ + \frac{2}{3} \sqrt{(a-y)(y-b)(y-c)}, \quad a > y \geq b > c.$$

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

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

$$4. \int_a^y \sqrt{\frac{(x-a)(x-c)}{x-b}} dx = \frac{2}{3} \sqrt{a-c} [(a+c-2b)E(\mu, q) - (a-b)F(\mu, q)] \\ + \frac{2}{3} (y+b-a-c) \sqrt{\frac{(y-a)(y-c)}{y-b}}, \quad y > a > b > c.$$

$$5. \int_y^a \sqrt{\frac{(a-x)(x-b)}{x-c}} dx = \frac{2}{3} \sqrt{a-c} [(a+b-2c)E(\lambda, p) - 2(b-c)F(\lambda, p)] \\ - \frac{2}{3} \sqrt{(a-y)(y-b)(y-c)}, \quad a > y \geq b > c.$$

$$6. \int_a^y \sqrt{\frac{(x-a)(x-b)}{x-c}} dx = \frac{2}{3} \sqrt{a-c} [(a+b-2c)E(\mu, q) - (a-b)F(\mu, q)] \\ + \frac{2}{3} (y+2c-a-2b) \sqrt{\frac{(y-a)(y-c)}{y-b}}, \quad y > a > b > c.$$


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