

$$\int_{\mathcal{F}} d\mu \, \Gamma_{(1,1)}(R) \, \mathcal{F}(1+n,1,0) = 2^{2+2n} \sqrt{\pi} \Gamma\left(n+\frac{1}{2}\right) \left(R^{1+2n} + \frac{1}{R^{1+2n}} - \left| R^{1+2n} - \frac{1}{R^{1+2n}} \right| \right)$$