with(*inttrans*) :
assume($a > 0$);
ricker := (1 - 2 *a* *t*^2) exp(-*a* *t*^2); **This is the standard definition of a Ricker**

$$\left(1 - 2\, a\sim t^2\right) \mathrm{e}^{-a\sim t^2} \tag{1}$$

fourier(*ricker*, *t*, omega); **This is its Fourier transform**

$$\frac{1}{2} \frac{\omega^2 \mathrm{e}^{-\frac{1}{4} \frac{\omega^2}{a\sim}} \sqrt{\pi}}{a\sim^{3/2}} \tag{2}$$

$$\tag{3}$$

simplify(*int*(*ricker*, [*t*$1])); **These are its primitives (its integrals)**

$$\mathrm{e}^{-a\sim t^2}\, t \tag{4}$$

simplify(*int*(*ricker*, [*t*$2]));

$$-\frac{1}{2} \frac{\mathrm{e}^{-a\sim t^2}}{a\sim} \tag{5}$$

simplify(*diff* (*ricker*, [*t*$1])); **These are its derivatives**

$$2\, a\sim t\, \mathrm{e}^{-a\sim t^2} \left(-3 + 2\, a\sim t^2\right) \tag{6}$$

simplify(*diff* (*ricker*, [*t*$2]));

$$-2\, a\sim \mathrm{e}^{-a\sim t^2} \left(3 - 12\, a\sim t^2 + 4\, a\sim^2 t^4\right) \tag{7}$$

simplify(*diff* (*ricker*, [*t*$3]));

$$4\, a\sim^2 t\, \mathrm{e}^{-a\sim t^2} \left(15 - 20\, a\sim t^2 + 4\, a\sim^2 t^4\right) \tag{8}$$

simplify(*diff* (*ricker*, [*t*$4]));

$$-4\, a\sim^2 \mathrm{e}^{-a\sim t^2} \left(-15 + 90\, a\sim t^2 - 60\, a\sim^2 t^4 + 8\, a\sim^3 t^6\right) \tag{9}$$

$$\tag{10}$$