```
> restart;
> f_n := t→a·cos(ω·t) + b·sin(ω·t);
```

$$f_n := t \to a\cos(\omega\, t) + b\sin(\omega\, t) \tag{1}$$

For omega_k ≠ omega_n:

```
> y = simplify( 1/ω_n ∫_0^t sin(ω_n·(t − s))·f_n(s) ds );
```

$$y = -\frac{\int_0^t \sin\left(\omega_n\,(-t+s)\right)\, f_n(s)\, ds}{\omega_n} \tag{2}$$

For omega_k = omega_n:

```
> y = simplify( 1/ω ∫_0^t sin(ω·(t − s))·f_n(s) ds );
```

$$y = -\frac{\int_0^t \sin(\omega\,(-t+s))\, f_n(s)\, ds}{\omega} \tag{3}$$