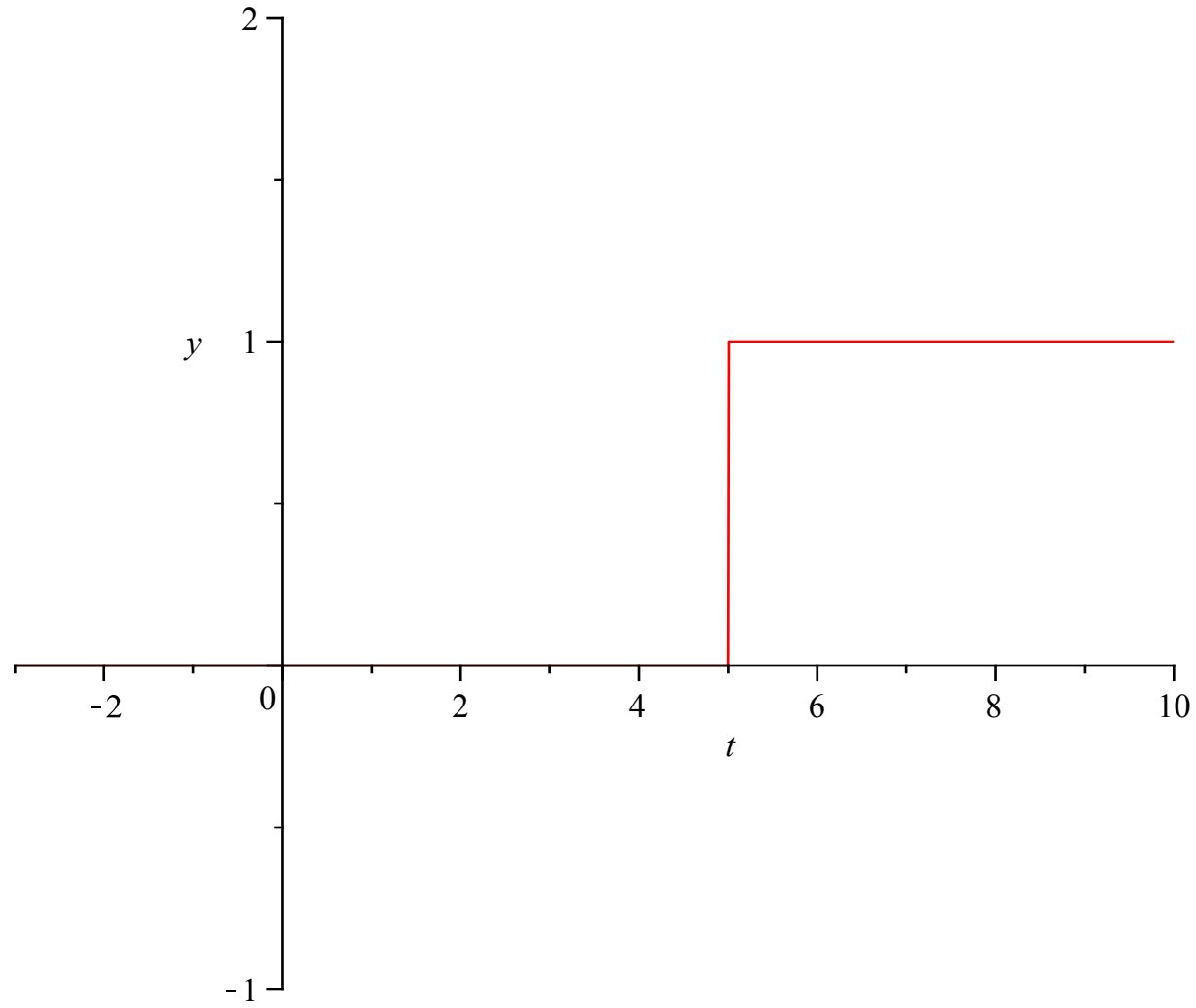
```
> restart
> Convol := int(cos(tau)·sin(t − tau), tau = 0..t)
```

$$Convol := \frac{1}{2}\sin(t)\,t \tag{1}$$

```
> with(inttrans):
> f := invlaplace(s/((s··2 + 1)··2), s, t)
```

$$f := \frac{1}{2}\sin(t)\,t \tag{2}$$

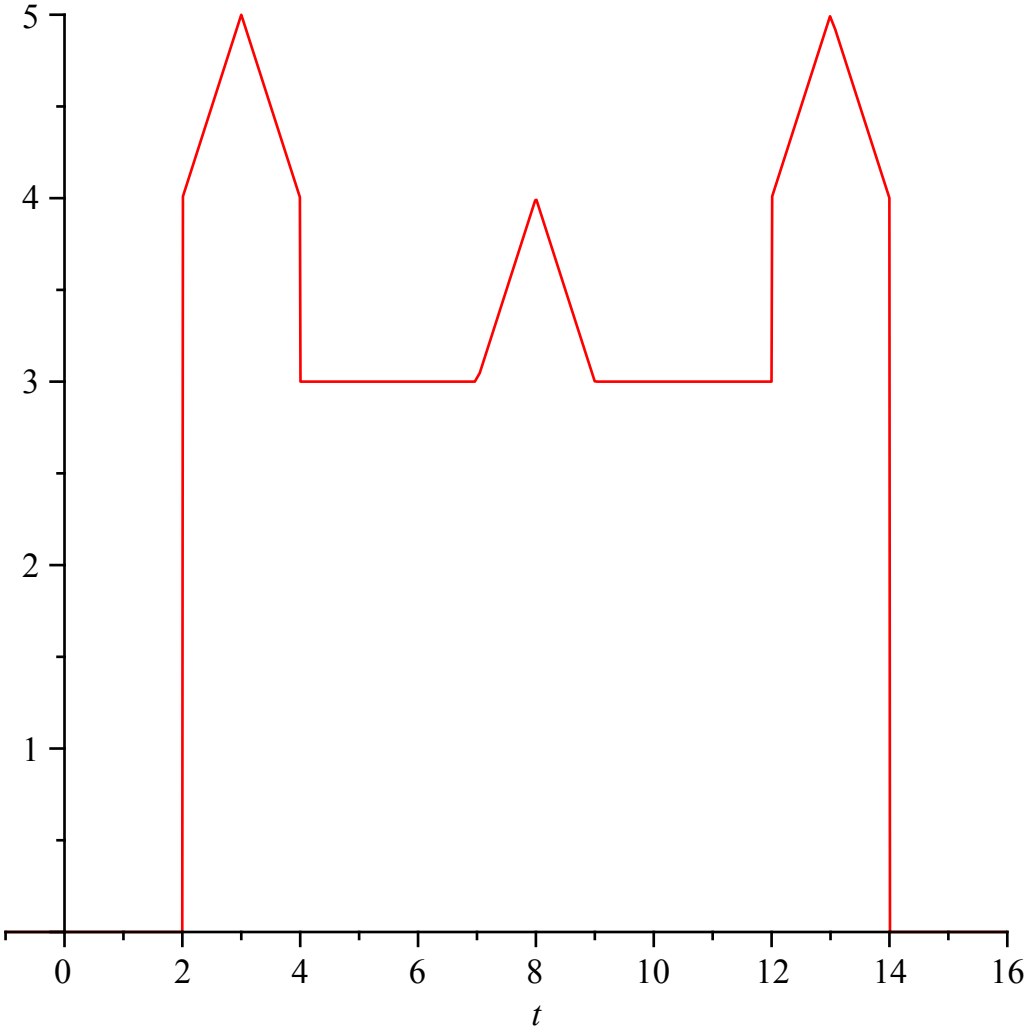
```
> plot(Heaviside(t − 5), t = −3..10, y = −1..2)
```




```
> diff(Heaviside(t − 6), t)
```

$$\mathrm{Dirac}(t-6) \tag{3}$$

```
> restart
> f := 4·Heaviside(t − 2) + (t − 2)·Heaviside(t − 2) − 2·(t − 3)·Heaviside(t − 3) + (t − 4)
      ·Heaviside(t − 4) − Heaviside(t − 4) + (t − 7)·Heaviside(t − 7) − 2·(t − 8)
      ·Heaviside(t − 8) + (t − 9)·Heaviside(t − 9) + Heaviside(t − 12) + (t − 12)
      ·Heaviside(t − 12) − 2·(t − 13)·Heaviside(t − 13) + (t − 14)·Heaviside(t − 14) − 4
      ·Heaviside(t − 14): plot(f, t = −1..16)
```




```
> with(inttrans) :
> LTMAC := laplace(f, t, s)
```

$$LTMAC := \frac{e^{-2s} + e^{-14s} - 2e^{-13s} + e^{-12s} + e^{-9s} - 2e^{-8s} + e^{-7s} + e^{-4s} - 2e^{-3s}}{s^2} + \frac{4e^{-2s} - 4e^{-14s} + e^{-12s} - e^{-4s}}{s} \quad \textbf{(4)}$$

```
>
>
>
>
```