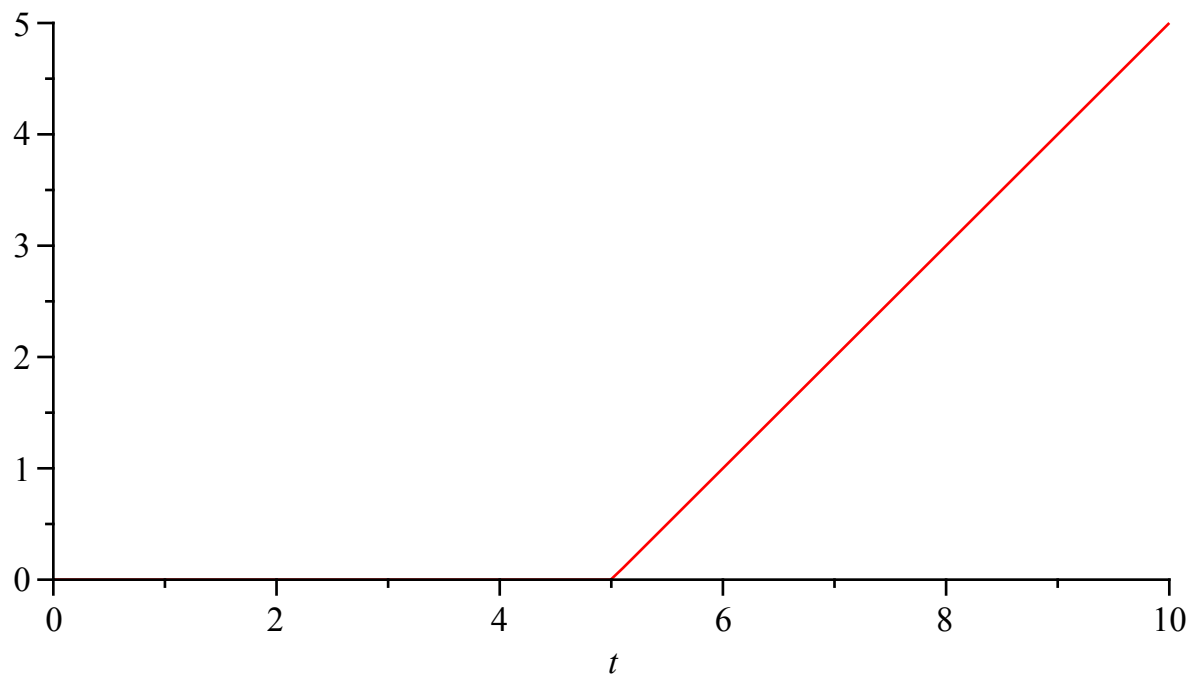


```

> restart
> Slope := (t - 5) · Heaviside(t - 5)
                                     Slope := (t - 5) Heaviside(t - 5)
> plot(Slope, t = 0 .. 10, scaling = CONSTRAINED)

```

(1)

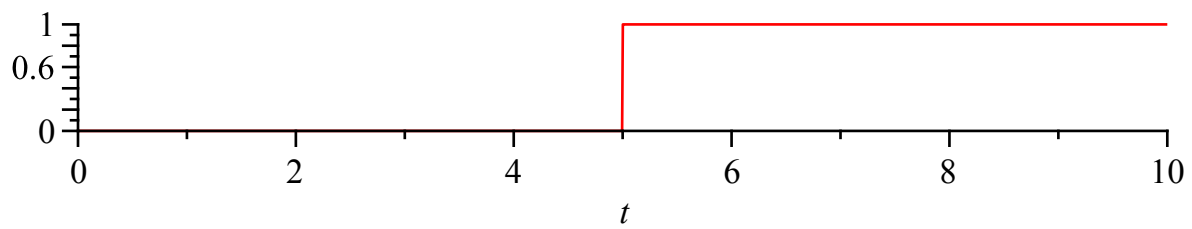


```

> Step := Heaviside(t - 5)
                                     Step := Heaviside(t - 5)
> plot(Step, t = 0 .. 10, scaling = CONSTRAINED)

```

(2)

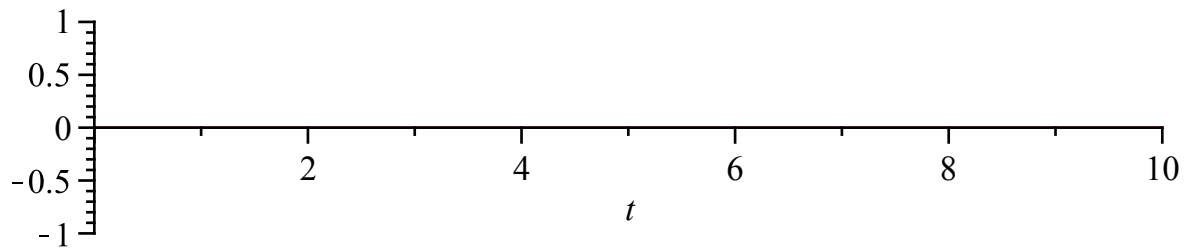


> $\text{Diff}(\text{Heaviside}(t - 5), t) = \text{diff}(\text{Heaviside}(t - 5), t)$

$$\frac{d}{dt} \text{Heaviside}(t - 5) = \text{Dirac}(t - 5)$$

(3)

> $\text{plot}(\text{Dirac}(t - 5), t = 0 \dots 10, \text{scaling} = \text{CONSTRAINED})$



```
> with(inttrans) :
```

```
> LapTransStep := laplace(Heaviside(t - 5), t, s)
```

$$LapTransStep := \frac{e^{-5s}}{s} \quad (4)$$

```
> LapTransDelta := laplace(Dirac(t - 5), t, s)
```

$$LapTransDelta := e^{-5s} \quad (5)$$

```
> LapTransSlope := laplace((t - 5) * Heaviside(t - 5), t, s)
```

$$LapTransSlope := \frac{e^{-5s}}{s^2} \quad (6)$$

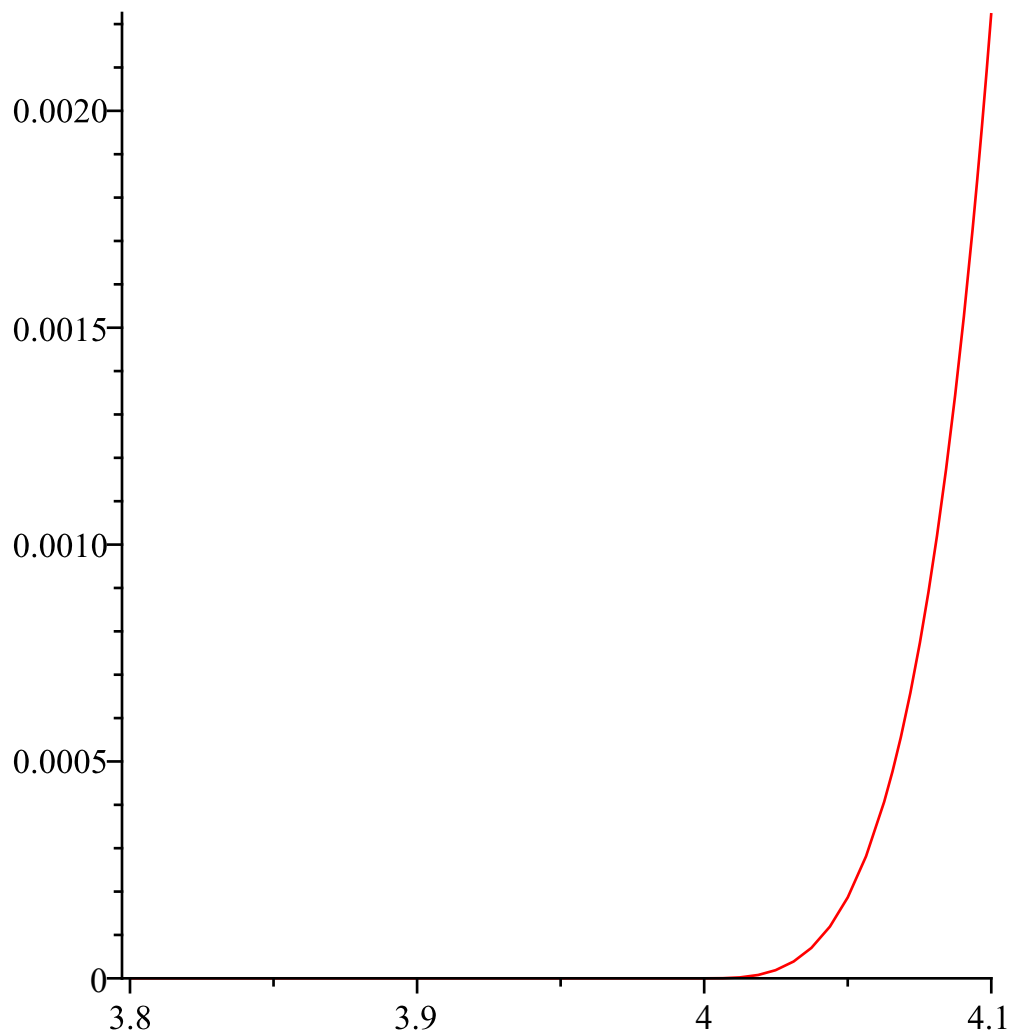
```
> F := \frac{6 \cdot \exp(-4s)}{(s - 8) \cdot 4}
```

$$F := \frac{6 e^{-4s}}{(s - 8)^4} \quad (7)$$

```
> f := invlaplace(F, s, t)
```

$$f := \text{Heaviside}(t - 4) (t - 4)^3 e^{8t - 32} \quad (8)$$

```
> plot(f, t = 3.8 .. 4.1)
```



```
> restart
```

```
> IntCon := 1/2 * Int(cos(2 * tau) * sin(2 * (t - tau)), tau = 0 .. t) = 1/2 * int(cos(2 * tau) * sin(2 * (t - tau)), tau = 0 .. t)
```

$$IntCon := \frac{1}{2} \int_0^t \cos(2 \tau) \sin(2 t - 2 \tau) d\tau = \frac{1}{4} \sin(2 t) t$$

(9)

```
>
>
>
>
>
>
>
>
```