

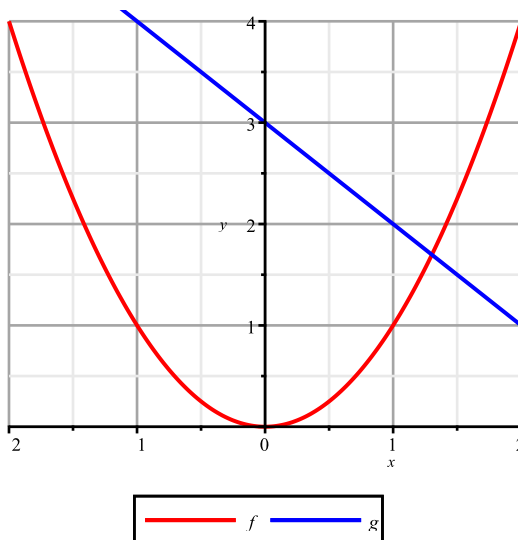
Parametrisering af område mellem 2 funktioner

- > restart
- > with(plots) :
- > with(plot2D3D2)

[NormalVektorer, TangentVektorer, plot2D, plot3D]

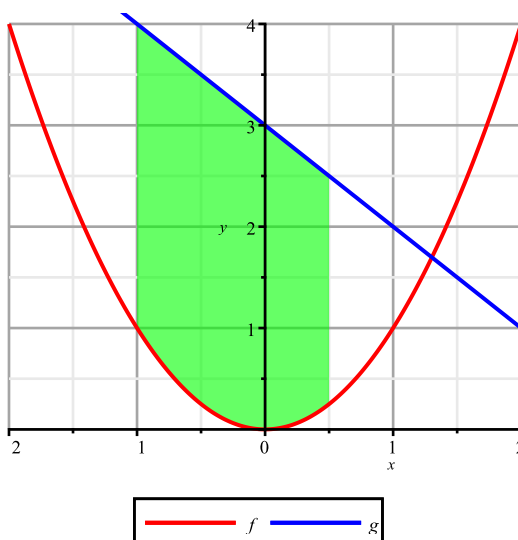
(1)

- > $f(x) := x^2$:
- > $g(x) := 3 - x$:
- > $GrafF := \text{plot}(f(x), x=-2..2, y=0..4, \text{gridlines}, \text{color} = \text{red}, \text{legend}=f)$:
- > $GrafG := \text{plot}(g(x), x=-2..2, y=0..4, \text{gridlines}, \text{color} = \text{blue}, \text{legend}=g)$:
- > $\text{display}(GrafF, GrafG)$



Ønsker at parametrisere området mellem funktioner for $x \in \left[1; \frac{1}{2} \right]$:

- > $\text{Område} := \text{shadebetween}\left(f(x), g(x), x = 1.. \frac{1}{2}, \text{color} = \text{green}, \text{showboundary} = \text{false}\right)$:
- > $\text{display}(GrafF, GrafG, \text{Område})$



Generel formel:

Parametrisering af området mellem $f(x)$ og $g(x)$ for x fra a til b

$$r(u, v) = (u, f(u) + v \cdot (g(u) - f(u))) \quad \text{for } u \in [a; b] \quad \text{og } v \in [0; 1]$$

Når $v = 0$ befinder man sig i $f(u)$, dvs. $f(x)$

Når $v = 1$ befinder man sig i $f(u) + 1 \cdot (g(u) - f(u)) = g(u)$, dvs. $g(x)$

Tjek:

> $r(u, v) := \langle u, f(u) + v \cdot (g(u) - f(u)) \rangle :$
 $'r(u, v)' = r(u, v)$

$$r(u, v) = \begin{bmatrix} u \\ u^2 + v(-u^2 - u + 3) \end{bmatrix}$$

(2)

> $INT := \left[-1, \frac{1}{2}, 0, 1 \right] :$

> $display(plot2D(r(u, v), INT), color = green, gridlines, style = surface, transparency = 0.3, view = [-2..2, 0..4,], labels = [x, y], scaling = constrained)$

