

## Legendre-Transformation

gegeben

$$y = f(x)$$

**Transformation**

$$L(f(x)) = g(u(x)) = g(u)$$

**Beispiel**

gegeben

$$y = f(x) = ax^2$$

Transformation

$$g(u(x)) = \left( \frac{d}{dx} f(x) \cdot x - f(x) \right)$$

$$g(u(x)) = (2 ax \cdot x - ax^2) = ax^2$$

Variableninversion

$$x = \frac{u}{2a}$$

Substitution

$$g(u) = \frac{u^2}{4a}$$

**Lösung der Transformation**

$$L(ax^2) = \frac{u^2}{4a}$$