Formeln S30 S35

From the provided context, here are the mathematical formulas extracted, along with their titles or explanations if available:

    1. **Faktor-Regel:**

$$\int_G a \cdot g \, dA = a \int_G g \, dA$$

(Equation 2.69)

    2. **Summen-Regel:**

$$\int_G (g + h) \, dA = \int_G g \, dA + \int_G h \, dA$$

(Equation 2.70)

    3. **Linearität:**

$$\int_G (a \cdot g + b \cdot h) \, dx = a \int_G g \, dA + b \int_G h \, dA$$

(Equation 2.71)

    4. **Zerlegungssatz in 2D:**

$$\int_{G \cup H} f \, dA = \int_G f \, dA + \int_H f \, dA - \int_{G \cap H} f \, dA$$

(Equation 2.72)

    5. **Flächensatz:**

$$A = \int_G 1 \, dA$$

(Equation 2.73)

    6. **Fubini-Satz für Rechtecke:**

$$\int_G f \, dA = \int_{y_0}^{y_E} \int_{x_0}^{x_E} f(x, y) \, dx \, dy = \int_{x_0}^{x_E} \int_{y_0}^{y_E} f(x, y) \, dy \, dx$$

(Equation 2.76)

    7. **Querschnittsfläche AQ(x):**

$$AQ(x) = \int_{y_0}^{y_E} f(x, y) \, dy$$

(Equation 2.77)

    8. **Volumenberechnung eines kleinen Streifens:**

$$\delta I \approx AQ(x) \cdot \delta x$$

(Equation 2.78)
    9. **Globale Volumenberechnung:**

$$I = \int_{x_0}^{x_E} AQ(x)\,dx = \int_{x_0}^{x_E} \int_{y_0}^{y_E} f(x,y)\,dy\,dx$$

(Equation 2.79)
    10. **Konstanten-Regel:**

$$\int_G C\,dA = C \cdot (x_E - x_0) \cdot (y_E - y_0)$$

(Equation 2.81)
    11. **Separation-Regel:**

$$\int_G g(x) \cdot h(y)\,dA = \int_{x_0}^{x_E} g(x)\,dx \cdot \int_{y_0}^{y_E} h(y)\,dy$$

(Equation 2.82)
    12. **Integration über ein in y-Richtung begrenztes Gebiet:**

$$\int_G f\,dA = \int_{x_0}^{x_E} \int_{u(x)}^{v(x)} f(x,y)\,dy\,dx$$

(Equation 2.87)
    13. **Integration über ein in x-Richtung begrenztes Gebiet:**

$$\int_G f\,dA = \int_{y_0}^{y_E} \int_{u(y)}^{v(y)} f(x,y)\,dx\,dy$$

(Equation 2.88)
    14. **Integration über ein dreieckartiges Gebiet:**

$$\int_G f\,dA = \int_{x_0}^{x_E} \int_{y_0}^{g(x)} f(x,y)\,dy\,dx = \int_{y_0}^{y_E} \int_{x_0}^{g^{-1}(y)} f(x,y)\,dx\,dy$$

(Equation 2.89)
    These formulas cover a range of integral calculations and properties, particularly focusing on 2D integrals and their applications in various geometric contexts.