

FORMULA SHEET

$$F = \vec{F} \cdot d\vec{r} \quad (1)$$

$$dx \wedge dy = \frac{\partial(x, y)}{\partial(r, \phi)} dr \wedge d\phi \quad (2)$$

$$g(F, G) = \vec{F} \cdot \vec{G} \quad (3)$$

$$g(\alpha \wedge \beta, \delta \wedge \gamma) = g(\alpha, \delta)g(\beta, \gamma) - g(\alpha, \gamma)g(\beta, \delta) \quad (4)$$

$$d\vec{r} = \sigma^i \hat{e}_i \quad (5)$$

$$ds^2 = d\vec{r} \cdot d\vec{r} \quad (6)$$

$$\alpha \wedge * \beta = g(\alpha, \beta) \omega \quad (7)$$

$$** = (-1)^{p(n-p)+s} \quad (8)$$

$$df = d(f) \quad (9)$$

$$d(f dg) = df \wedge dg \quad (10)$$

$$d(\alpha \wedge \beta) = d\alpha \wedge \beta + (-1)^p \alpha \wedge d\beta \quad (11)$$

$$d^2 = 0 \quad (12)$$

$$\omega_{ij} + \omega_{ji} = 0 \quad (13)$$

$$d\sigma^i + \omega^i_j \wedge \sigma^j = 0 \quad (14)$$

$$d\omega^i_j + \omega^i_k \wedge \omega^k_j = \Omega^i_j \quad (15)$$