APENDICE C
RESUMEN DE RELACIONES VECTORIALES

C1. Ecuaciones de álgebra vectorial

Ecuación No.	Ecuación
(1.31)	$\mathbf{A}\cdot\mathbf{B} = \mathbf{B}\cdot\mathbf{A}$
(1.32)	$\mathbf{A}\cdot(\mathbf{B}+\mathbf{C}) = \mathbf{A}\cdot\mathbf{B} + \mathbf{A}\cdot\mathbf{C}$
(1.55)	$\mathbf{A}\times\mathbf{B} = -\mathbf{B}\times\mathbf{A}$
(1.56)	$\mathbf{A}\times(\mathbf{B}+\mathbf{C}) = \mathbf{A}\times\mathbf{B} + \mathbf{A}\times\mathbf{C}$
(1.58)	$\mathbf{A}\times\mathbf{A} = \mathbf{0}$
(1.72)	$\mathbf{A}\cdot\mathbf{B}\times\mathbf{C} = \mathbf{A}\times\mathbf{B}\cdot\mathbf{C}$
(1.76)	$\mathbf{A}\cdot\mathbf{B}\times\mathbf{C} = [\mathbf{ABC}]$
(1.77)	$[\mathbf{ABC}] = [\mathbf{BCA}] = [\mathbf{CAB}] = -[\mathbf{ACB}] = -[\mathbf{BAC}] = -[\mathbf{CBA}]$
(1.83)	$\mathbf{A}\times(\mathbf{B}\times\mathbf{C}) = (\mathbf{A}\cdot\mathbf{C})\mathbf{B} - (\mathbf{A}\cdot\mathbf{B})\mathbf{C}$
(1.98)	$(\mathbf{A}\times\mathbf{B})\times\mathbf{C} = (\mathbf{A}\cdot\mathbf{C})\mathbf{B} - (\mathbf{B}\cdot\mathbf{C})\mathbf{A}$
(3.112)	$\nabla(\phi+\psi) = \nabla\phi + \nabla\psi$
(3.113)	$\nabla(\phi\psi) = \phi\nabla\psi + \psi\nabla\phi$
(3.124)	$\nabla\phi = \nabla\phi(u) = \phi'(u)\nabla u$
(3.128)	$\nabla\cdot(\mathbf{f}+\mathbf{g}) = \nabla\cdot\mathbf{f} + \nabla\cdot\mathbf{g}$
(3.131)	$\text{div (grad } \phi) = \nabla\cdot(\nabla\phi) = \nabla^2\phi$
(3.140)	$\nabla\times(\mathbf{f}+\mathbf{g}) = \nabla\times\mathbf{f} + \nabla\times\mathbf{g}$
(3.142)	$\nabla\times(\nabla\phi) = \mathbf{0}$
(3.143)	$\nabla\cdot(\nabla\times\mathbf{f}) = 0$
(3.154)	$(\mathbf{f}\times\nabla)\cdot\mathbf{g} = \mathbf{f}\cdot(\nabla\times\mathbf{g})$
(3.155)	$\nabla\cdot(\phi\mathbf{f}) = \phi\nabla\cdot\mathbf{f} + \mathbf{f}\cdot(\nabla\phi)$
(3.156)	$\nabla\times(\phi\mathbf{f}) = \phi\nabla\times\mathbf{f} + (\nabla\phi)\times\mathbf{f} = \phi\nabla\times\mathbf{f} - \mathbf{f}\times\nabla\phi$
(3.157)	$\nabla\cdot(\mathbf{f}\times\mathbf{g}) = \mathbf{g}\cdot(\nabla\times\mathbf{f}) - \mathbf{f}\cdot(\nabla\times\mathbf{g})$
(3.158)	$\nabla\times(\mathbf{f}\times\mathbf{g}) = \mathbf{f}(\nabla\cdot\mathbf{g}) - \mathbf{g}(\nabla\cdot\mathbf{f}) + (\mathbf{g}\cdot\nabla)\mathbf{f} - (\mathbf{f}\cdot\nabla)\mathbf{g}$
(3.159)	$\nabla(\mathbf{f}\cdot\mathbf{g}) = \mathbf{f}\times(\nabla\times\mathbf{g}) + \mathbf{g}\times(\nabla\times\mathbf{f}) + (\mathbf{f}\cdot\nabla)\mathbf{g} + (\mathbf{g}\cdot\nabla)\mathbf{f}$
(3.163)	$\text{rot}\quad(\text{rot }\mathbf{f}) = \nabla\times(\nabla\times\mathbf{f}) = \nabla(\nabla\cdot\mathbf{f}) - \nabla^2\mathbf{f}$
(3.164)	$\nabla^2\mathbf{f} = \nabla(\nabla\cdot\mathbf{f}) - \nabla\times(\nabla\times\mathbf{f})$
[Prob. 3.89(b)]	$\nabla\left(\dfrac{\phi}{\psi}\right) = \dfrac{\psi\nabla\phi - \phi\nabla\psi}{\psi^2}$