

13.1 | 연습문제 정답

01.

(a) $\mathbf{F}(0,1) = \langle 1, 0 \rangle$

(b) $\mathbf{F}(-1,1) = \left\langle \frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}} \right\rangle$

(c) $\mathbf{F}(1,3) = \left\langle \frac{3}{\sqrt{10}}, -\frac{1}{\sqrt{10}} \right\rangle$

(d) $\mathbf{F}(-3,-1) = \left\langle -\frac{1}{\sqrt{10}}, \frac{3}{\sqrt{10}} \right\rangle$

02.

(a) $\mathbf{F}(0,0) = \langle 0, 0 \rangle$, $\mathbf{F}(1,0) = \langle -1, 0 \rangle$, $\mathbf{F}(0,1) = \langle 0, 2 \rangle$,

$\mathbf{F}(-1,0) = \langle 1, 0 \rangle$, $\mathbf{F}(0,-1) = \langle 0, -2 \rangle$, $\mathbf{F}(1,1) = \langle -1, 2 \rangle$

(b) $\mathbf{F}(0,0) = \langle 0, 0 \rangle$, $\mathbf{F}(1,0) = \langle 0, -3 \rangle$, $\mathbf{F}(0,1) = \langle 2, 0 \rangle$,

$\mathbf{F}(-1,0) = \langle 0, 3 \rangle$, $\mathbf{F}(0,-1) = \langle -2, 0 \rangle$

03.

(a) $\nabla f = \langle 2x, 2y, -4z \rangle$

(b) $\nabla f = \frac{-1}{(x^2 + y^2 + z^2)^{\frac{3}{2}}} \langle x, y, z \rangle$

(c) $\nabla f = e^{3x+4y} \langle 3\cos(5z), 4\cos(5z), -5\sin(5z) \rangle$

(d) $\nabla f = \cos(x+y+z) \langle 1, 1, 1 \rangle$

(e) $\nabla f = \langle e^y \cos z, x e^y \cos z, -x e^y \sin z \rangle$

(f) $\nabla f = \left\langle \frac{1}{x}, \frac{1}{y}, \frac{1}{z} \right\rangle$

04.

$$(a) \quad \nabla f(x, y) = \left\langle \frac{1}{1+x^2} + \frac{y^2}{xy^2}, \frac{2xy}{xy^2} \right\rangle$$

$$(b) \quad \nabla g(x, y) = \langle ye^{xy} + 2x, xe^{xy} + 3y^2 \rangle$$

05. $g(r) + c$

06. 생략