

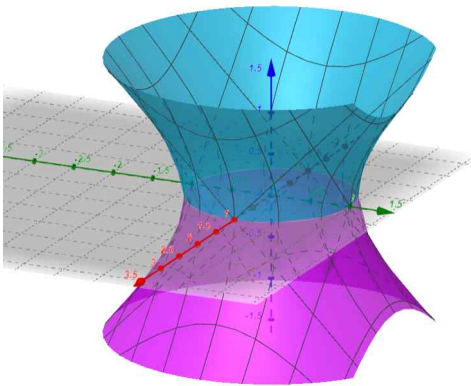
9.1 | 연습문제 정답

01. $(x-1)^2 + (y+1)^2 + z^2 = 5^2$

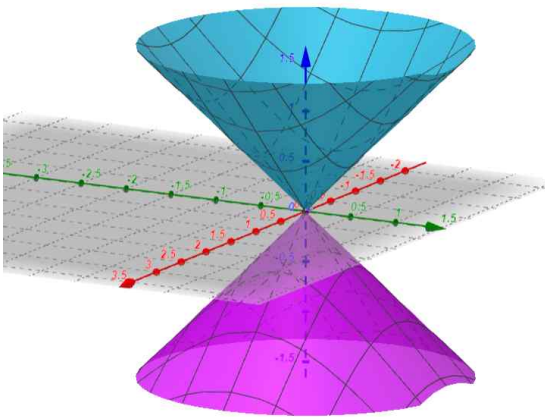
02. $(a_2 - a_1) \left(x - \frac{a_1 + a_2}{2} \right) + (b_2 - b_1) \left(y - \frac{b_1 + b_2}{2} \right) + (c_2 - c_1) \left(z - \frac{c_1 + c_2}{2} \right) = 0$

03. $\left(x - \frac{(a_1 - a_2)mn}{m^2 - n^2} \right)^2 + \left(y - \frac{(b_1 - b_2)mn}{m^2 - n^2} \right)^2 + \left(z - \frac{(c_1 - c_2)mn}{m^2 - n^2} \right)^2$
 $= \left\{ \frac{mn \sqrt{(a_1 - a_2)^2 + (b_1 - b_2)^2 + (c_1 - c_2)^2}}{m^2 - n^2} \right\}^2$

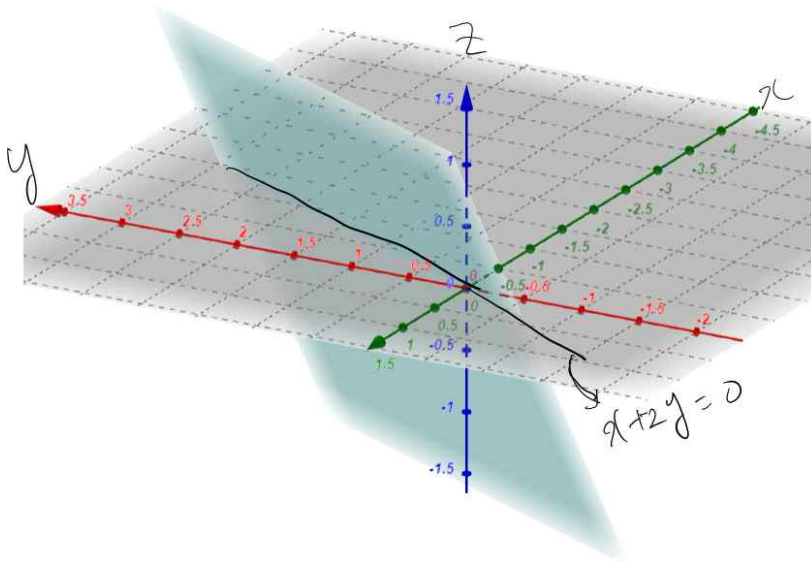
04.



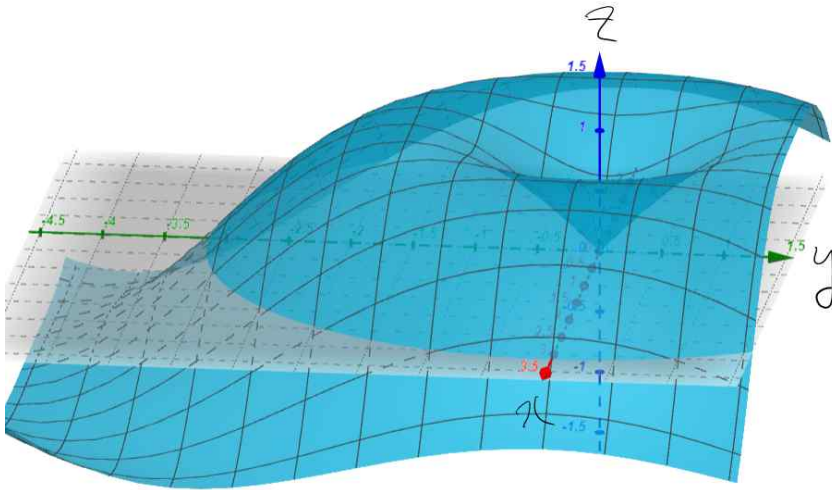
05.



06.



07.



08. $\alpha_1 = \frac{3}{8}, \alpha_2 = \frac{1}{8}, \alpha_3 = \frac{5}{8}$

09. (a) $3\sqrt{37}$

(b) $\theta = \cos^{-1}\left(-\frac{16}{65}\right)$

(c) 끝점이 $(5, 12), (4, -3)$ 인 선분

10. (a) $\text{comp}_{\mathbf{a}}\mathbf{b} = \frac{12}{\sqrt{13}}, \text{proj}_{\mathbf{a}}\mathbf{b} = \frac{12}{13}\langle 2, -3 \rangle$

(b) $\text{comp}_{\mathbf{a}}\mathbf{b} = \frac{3}{\sqrt{5}}, \text{proj}_{\mathbf{a}}\mathbf{b} = \frac{1}{5}\langle 3, 6, 0 \rangle$

(c) $\text{comp}_{\mathbf{a}}\mathbf{b} = -\sqrt{2}, \text{proj}_{\mathbf{a}}\mathbf{b} = -\mathbf{i} - \mathbf{k}$

(d) $\text{comp}_{\mathbf{a}}\mathbf{b} = \frac{1}{\sqrt{2}}, \text{proj}_{\mathbf{a}}\mathbf{b} = \frac{1}{6}\mathbf{i} + \frac{2}{3}\mathbf{j} + \frac{1}{6}\mathbf{k}$

11. 경사면을 따라 위의 방향으로 $\frac{5}{2}\text{kg}$ 의 힘

12.

(a) $\mathbf{u}$ 의 방향각 $\alpha = \cos^{-1} \frac{4}{\sqrt{26}}, \beta = \cos^{-1} \frac{1}{\sqrt{26}}, \gamma = \cos^{-1} \frac{3}{\sqrt{26}}$

$\mathbf{u}$ 의 방향코사인 $\cos \alpha = \frac{4}{\sqrt{26}}, \cos \beta = \frac{1}{\sqrt{26}}, \cos \gamma = \frac{3}{\sqrt{26}}$

(b) $\mathbf{v}$ 방향에 대한 $\mathbf{u}$ 의 방향성분 $\frac{\mathbf{u} \cdot \mathbf{v}}{\|\mathbf{v}\|} = -\frac{7}{5\sqrt{2}}$

$\mathbf{v}$ 방향에 대한 $\mathbf{u}$ 의 정사영

$$\text{proj}_{\mathbf{v}} \mathbf{u} = \left(\frac{\mathbf{u} \cdot \mathbf{v}}{\|\mathbf{v}\|^2} \right) \mathbf{v} = -\frac{7}{50} \langle 3, -4, -5 \rangle$$

(c) $\mathbf{u} = \mathbf{u}_0 + \text{proj}_{\mathbf{v}} \mathbf{u} = \left\langle \frac{221}{50}, \frac{11}{25}, \frac{23}{10} \right\rangle + \left\langle -\frac{21}{50}, \frac{28}{50}, \frac{35}{50} \right\rangle = \langle 4, 1, 3 \rangle$

13. 생략
14. 생략
15. 생략