

10.3 | 연습문제 정답

01. $T(t) = \left\langle \frac{2t}{\sqrt{8t^2 - 4t + 1}}, \frac{2t - 1}{\sqrt{8t^2 - 4t + 1}} \right\rangle$

02. $\kappa = \frac{2}{5\sqrt{5}}$, 곡률벡터 $\left\langle \frac{-2}{25}, \frac{4}{25} \right\rangle$

03. 곡률 $\kappa(x) = \frac{x}{(1+x^2)^{\frac{3}{2}}}$, 곡률이 최대가 되는 점 : $\left(\frac{\sqrt{2}}{2}, \ln \frac{\sqrt{2}}{2} \right)$

04. 곡률 $\kappa(x) = \frac{4}{(16x^2 - 8x + 2)^{\frac{3}{2}}}$, 곡률이 최대가 되는 점 : $\left(\frac{1}{4}, \frac{25}{8} \right)$

05. $\kappa = \frac{1}{2}$, $(x-2)^2 + (y+1)^2 = 4$

06. $\kappa = 1$, $x^2 + (y-2)^2 = 1$

07. $\kappa = \frac{5}{16}$, $\left(x - \frac{41}{5}\right)^2 + y^2 = \left(\frac{16}{5}\right)^2$

08. $\kappa = \frac{1}{10\sqrt{5}}$, $(x+18)^2 + (y-11)^2 = (10\sqrt{5})^2$

09. $\kappa = \frac{2}{[8t^2 - 4t + 1]^{\frac{3}{2}}}$

10. $\kappa = \frac{1}{4\sqrt{2} \cdot \sqrt{1 - \cos t}}$

11. $\frac{1}{\kappa} = \frac{[1 + \sec^4 x]^{\frac{3}{2}}}{|2\sec^2 x \tan x|}$

12. $\kappa = \frac{3}{2\sqrt{2} \sqrt{1 - \cos \theta}}$

13. $\kappa = \frac{12}{[9 + 7\sin^2 t]^{\frac{3}{2}}}$, 곡률의 최댓값은 $\frac{4}{9}$, 최솟값은 $\frac{3}{16}$

14. $(x-1)^2 + y^2 = 2$

15. $(x-\pi)^2 + (y+2)^2 = 4^2$