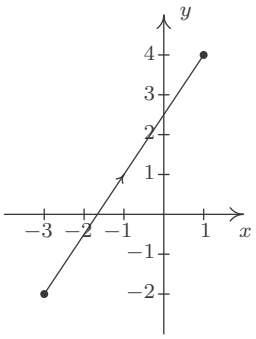
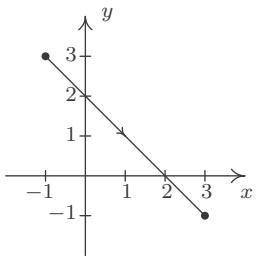
Worksheet 20 KEY - Parametric Equations (§10.5)

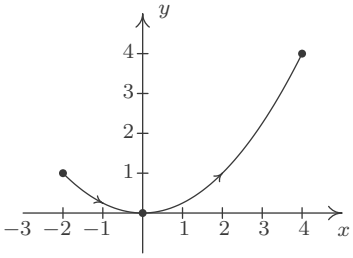
1. $\begin{cases} x = 4t - 3 \\ y = 6t - 2 \end{cases}$ for $0 \le t \le 1$



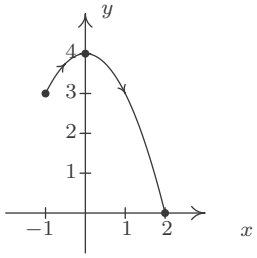
2. $\begin{cases} x = 4t - 1 \\ y = 3 - 4t \end{cases}$ for $0 \le t \le 1$



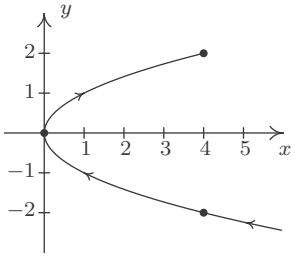
3. $\begin{cases} x = 2t \\ y = t^2 \end{cases}$ for $-1 \le t \le 2$



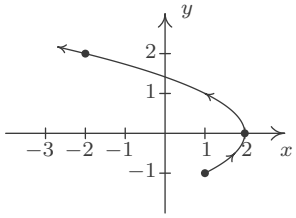
4. $\begin{cases} x = t - 1 \\ y = 3 + 2t - t^2 \end{cases}$ for $0 \le t \le 3$



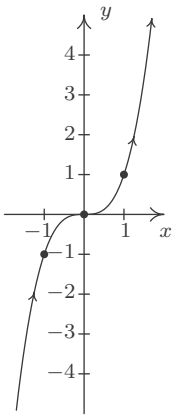
5. $\begin{cases} x = t^2 + 2t + 1 \\ y = t + 1 \end{cases}$ for $t \le 1$



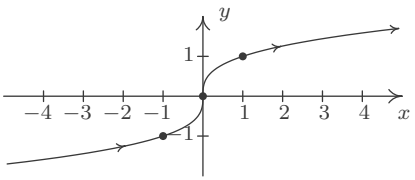
6. $\begin{cases} x = \frac{1}{9}\left(18 - t^2\right) \\ y = \frac{1}{3}t \end{cases}$ for $t \ge -3$



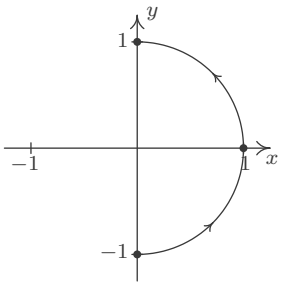
7. $\begin{cases} x = t \\ y = t^3 \end{cases}$ for $-\infty < t < \infty$



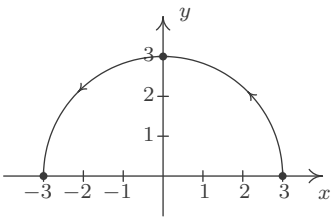
8. $\begin{cases} x = t^3 \\ y = t \end{cases}$ for $-\infty < t < \infty$



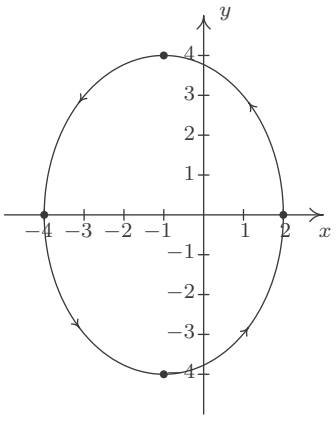
9. $\begin{cases} x = \cos(t) \\ y = \sin(t) \end{cases}$ for $-\frac{\pi}{2} \le t \le \frac{\pi}{2}$



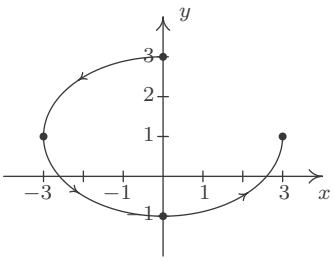
10. $\begin{cases} x = 3\cos(t) \\ y = 3\sin(t) \end{cases}$ for $0 \le t \le \pi$



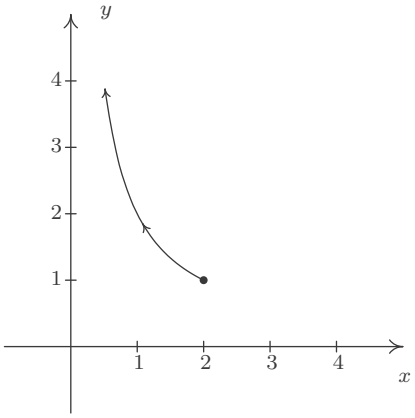
11. $\begin{cases} x = -1 + 3\cos(t) \\ y = 4\sin(t) \end{cases}$ for $0 \le t \le 2\pi$



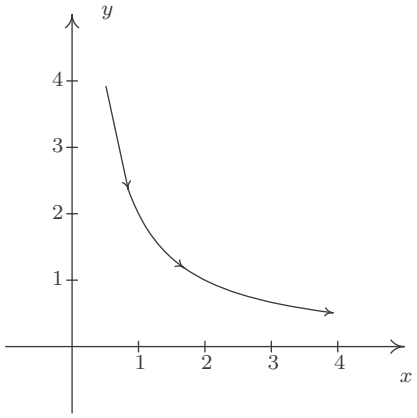
12. $\begin{cases} x = 3\cos(t) \\ y = 2\sin(t) + 1 \end{cases}$ for $\frac{\pi}{2} \le t \le 2\pi$



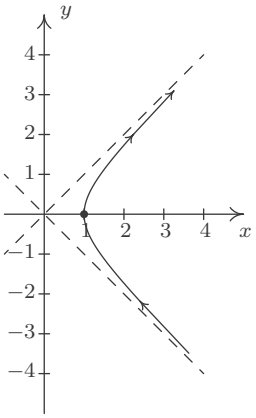
13. $\begin{cases} x = 2\cos(t) \\ y = \sec(t) \end{cases}$ for $0 \le t < \dfrac{\pi}{2}$



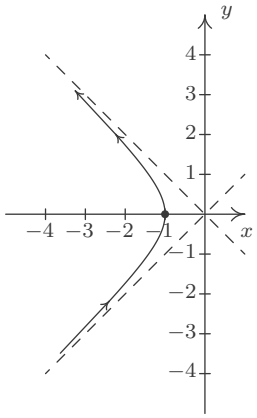
14. $\begin{cases} x = 2\tan(t) \\ y = \cot(t) \end{cases}$ for $0 < t < \dfrac{\pi}{2}$



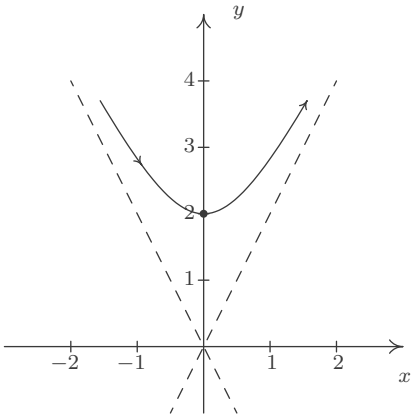
15. $\begin{cases} x = \sec(t) \\ y = \tan(t) \end{cases}$ for $-\dfrac{\pi}{2} < t < \dfrac{\pi}{2}$



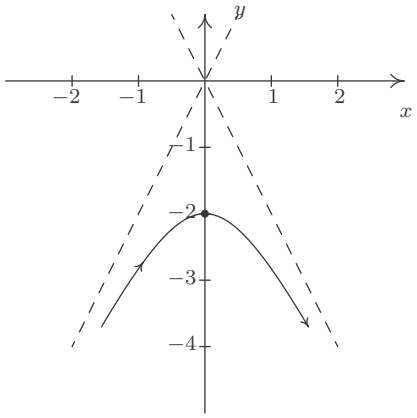
16. $\begin{cases} x = \sec(t) \\ y = \tan(t) \end{cases}$ for $\dfrac{\pi}{2} < t < \dfrac{3\pi}{2}$



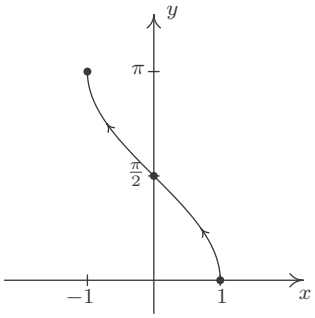
17. $\begin{cases} x = \tan(t) \\ y = 2\sec(t) \end{cases}$ for $-\dfrac{\pi}{2} < t < \dfrac{\pi}{2}$



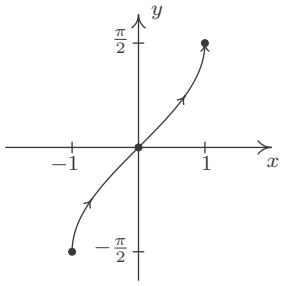
18. $\begin{cases} x = \tan(t) \\ y = 2\sec(t) \end{cases}$ for $\dfrac{\pi}{2} < t < \dfrac{3\pi}{2}$



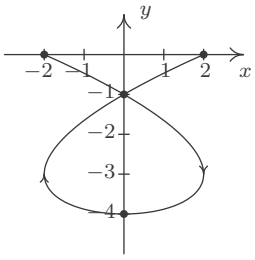
19. $\begin{cases} x = \cos(t) \\ y = t \end{cases}$ for $0 < t < \pi$



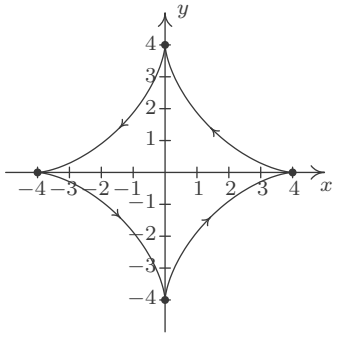
20. $\begin{cases} x = \sin(t) \\ y = t \end{cases}$ for $-\dfrac{\pi}{2} < t < \dfrac{\pi}{2}$



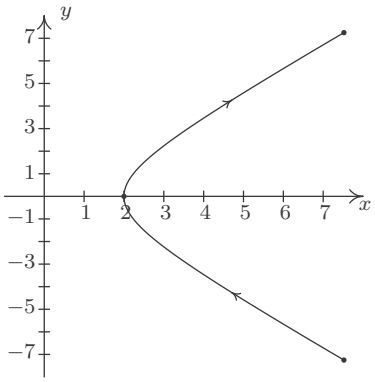
21. $\begin{cases} x = t^3 - 3t \\ y = t^2 - 4 \end{cases}$ for $-2 \le t \le 2$



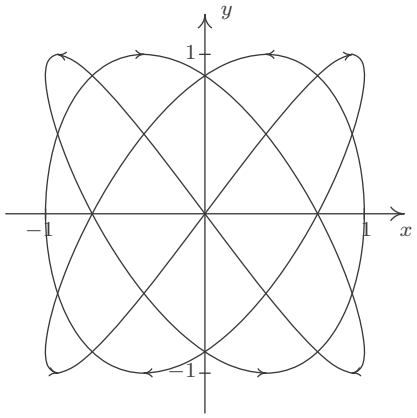
22. $\begin{cases} x = 4\cos^3(t) \\ y = 4\sin^3(t) \end{cases}$ for $0 \le t \le 2\pi$



23. $\begin{cases} x = e^t + e^{-t} \\ y = e^t - e^{-t} \end{cases}$ for $-2 \le t \le 2$



24. $\begin{cases} x = \cos(3t) \\ y = \sin(4t) \end{cases}$ for $0 \le t \le 2\pi$



25. $\begin{cases} x = 3 - 5t \\ y = -5 + 7t \end{cases}$ for $0 \le t \le 1$

26. $\begin{cases} x = 5t - 2 \\ y = -1 - 3t \end{cases}$ for $0 \le t \le 1$

27. $\begin{cases} x = t \\ y = 4 - t^2 \end{cases}$ for $-2 \le t \le 2$

28. $\begin{cases} x = t - 2 \\ y = 4t - t^2 \end{cases}$ for $0 \le t \le 4$

29. $\begin{cases} x = t^2 - 9 \\ y = t \end{cases}$ for $-2 \le t \le 3$

30. $\begin{cases} x = t^2 - 6t \\ y = 3 - t \end{cases}$ for $0 \le t \le 5$

31. $\begin{cases} x = 5\cos(t) \\ y = 5\sin(t) \end{cases}$ for $0 \le t < 2\pi$

32. $\begin{cases} x = 1 + 2\cos(t) \\ y = 2\sin(t) \end{cases}$ for $0 \le t < 2\pi$

33. $\begin{cases} x = 3\cos(t) \\ y = 3 + 3\sin(t) \end{cases}$ for $0 \le t < 2\pi$

34. $\begin{cases} x = 3\cos(t) \\ y = 3 - 3\sin(t) \end{cases}$ for $0 \le t < 2\pi$

35. $\begin{cases} x = 3 + \sqrt{117}\cos(t) \\ y = -1 + \sqrt{117}\sin(t) \end{cases}$ for $0 \le t < 2\pi$

36. $\begin{cases} x = 1 + 3\cos(t) \\ y = \sin(t) \end{cases}$ for $0 \le t < 2\pi$

37. $\begin{cases} x = 2\cos(t) \\ y = 3\sin(t) - 3 \end{cases}$ for $0 \le t < 2\pi$

38. $\{x(t),\, y(t)$ where:

$$x(t) = \begin{cases} 3t, & 0 \le t \le 1 \\ 6 - 3t, & 1 \le t \le 2 \\ 0, & 2 \le t \le 3 \end{cases} \qquad y(t) = \begin{cases} 0, & 0 \le t \le 1 \\ 4t - 4, & 1 \le t \le 2 \\ 12 - 4t, & 2 \le t \le 3 \end{cases}$$