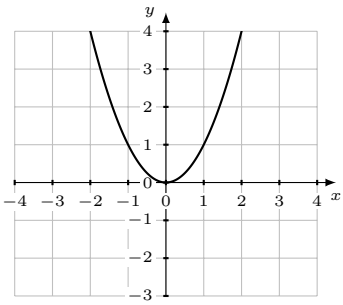
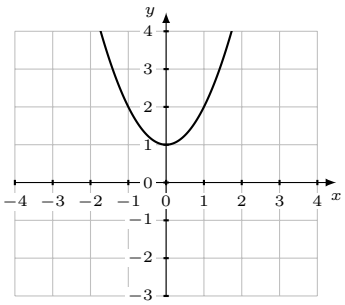
Verschiebungen

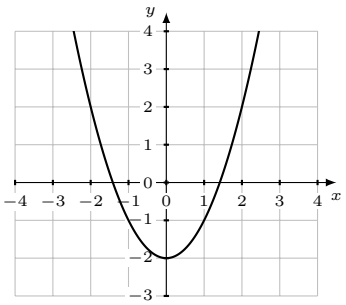
1. **Vertikale Verschiebungen.** Wird zu einer bestehenden Funktion ein konstanter Wert, d.h. eine fixe Zahl, addiert, so verschiebt sich der Funktionsgraph um diesen Wert entlang der y-Achse nach oben.



$f(x) = x^2$

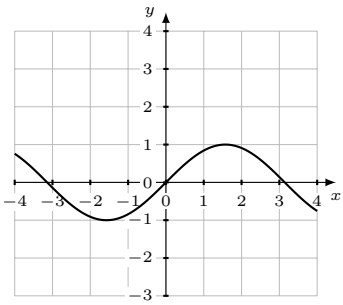


$f(x) = x^2 + 1$

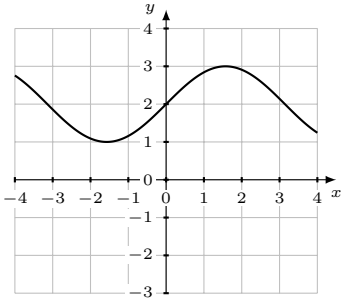


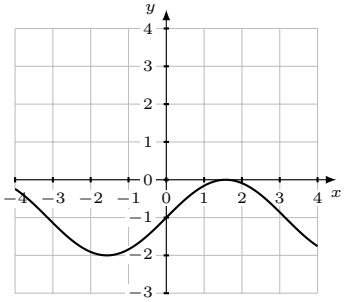
$f(x) = x^2 - 2$

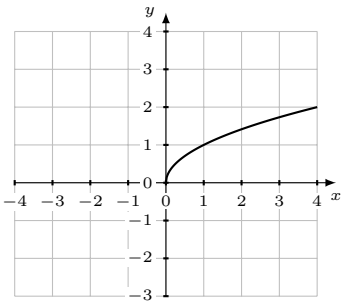
Geben Sie die Funktionsgleichung der verschobenen Funktionen an:



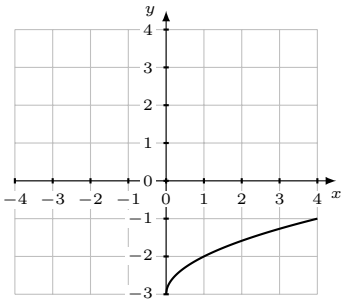
$f(x) = \sin(x)$

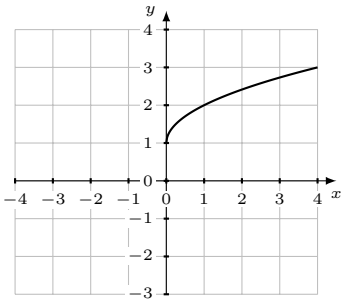


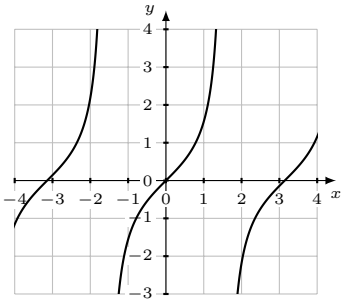




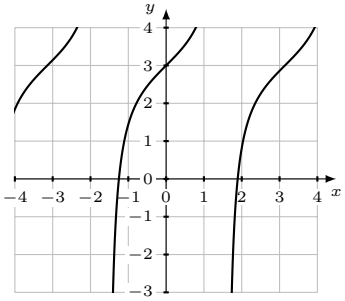
$f(x) = \sqrt{x}$

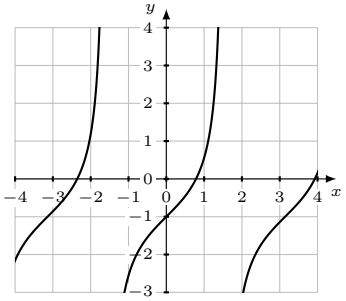




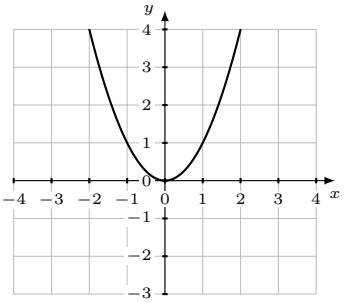


$f(x) = \tan(x)$

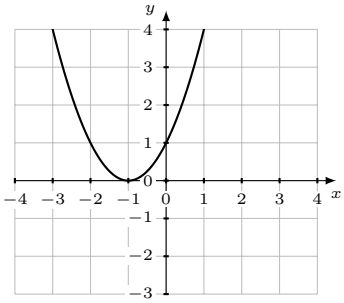




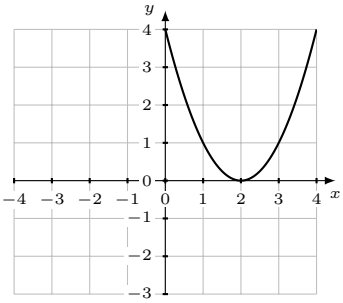
2. **Horizontale Verschiebungen.** Wird bei einer bestehenden Funktion zu jedem Vorkommen von x ein konstanter Wert addiert, so wird der Funktionsgraph um diesen Wert entlang der x-Achse nach **links** verschoben.



$f(x) = x^2$

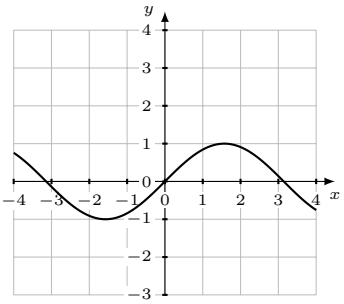


$f(x) = (x+1)^2$

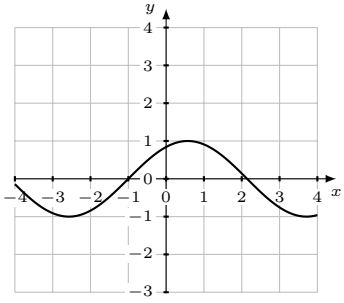


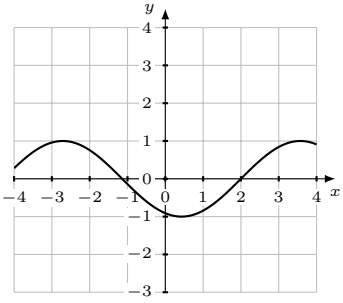
$f(x) = (x-2)^2$

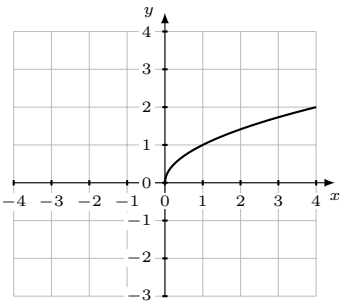
Geben Sie die Funktionsgleichung der verschobenen Funktionen an:



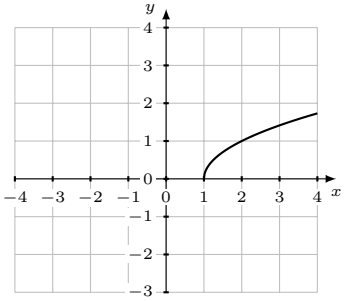
$f(x) = \sin(x)$

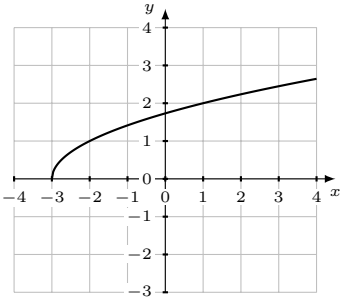


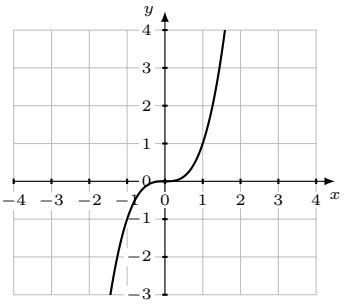




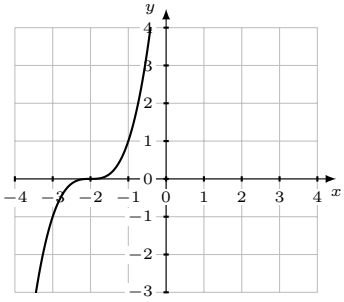
$f(x) = \sqrt{x}$

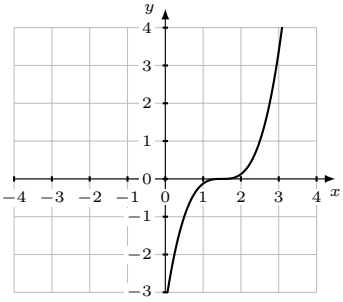






$f(x) = x^3$





3. Allgemeine Verschiebungen. Geben Sie die Funktionsgleichung zu den dargestellten Funktionsgraphen an. Es werden folgende Grundfunktionen verwendet:

$$f(x) = x^2 \qquad f(x) = \cos(x) \qquad f(x) = \sqrt{x} = x^{\frac{1}{2}} \qquad f(x) = \frac{1}{x} = x^{-1}$$

Geben Sie die Funktionsgleichung der verschobenen Funktionen an.

