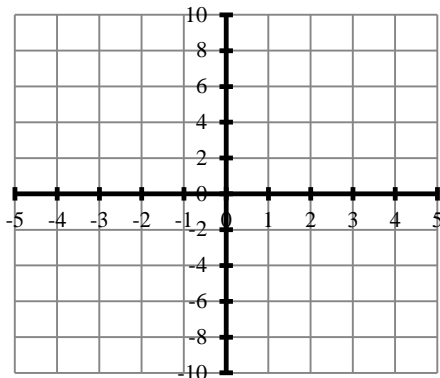


4.5. Wiederholung ganzrationaler Funktionen

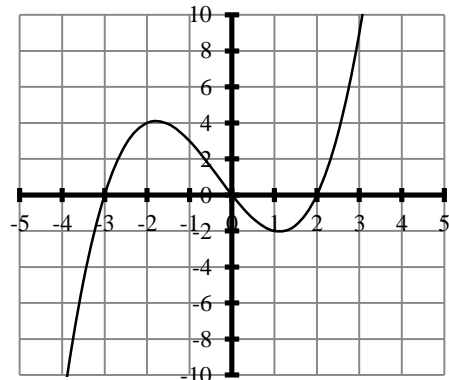
Trage die fehlenden Skizzen und Funktionsgleichungen ein. Kontrolliere das Ergebnis anhand der Achsenschnittpunkte und eines weiteren Punktes.

Aufgabe 1



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

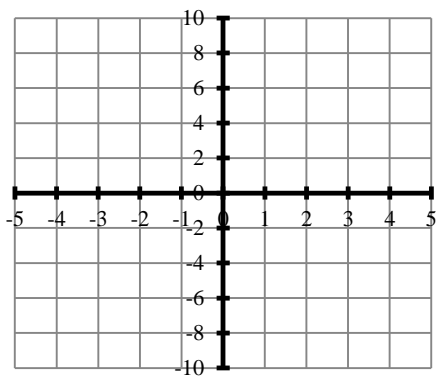
=



$$f(x) =$$

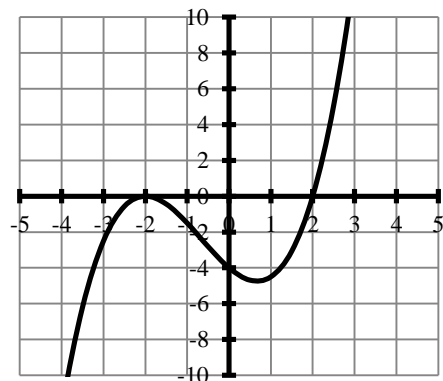
=

Aufgabe 2



$$f(x) = 0,2(x^2 - 1)(x^2 - 9)$$

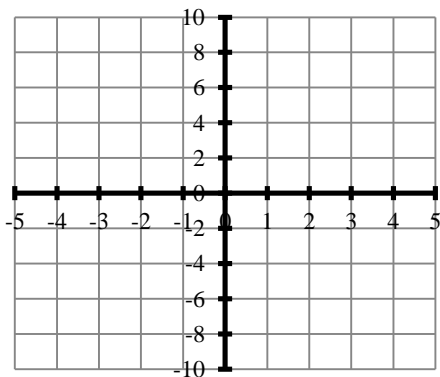
=



$$f(x) =$$

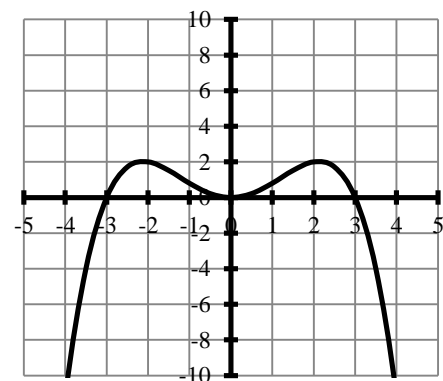
=

Aufgabe 3



$$f(x) = (x - 2)^3$$

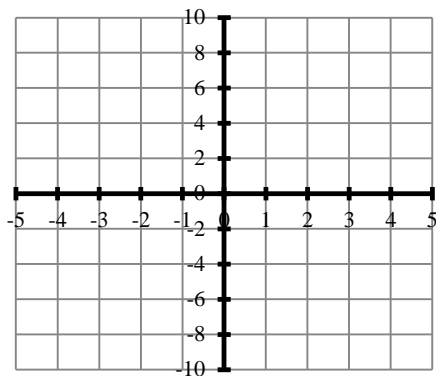
=



$$f(x) =$$

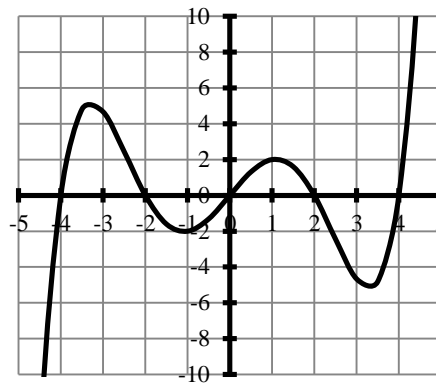
=

Aufgabe 4



$$f(x) = -x(x^2 - 4)$$

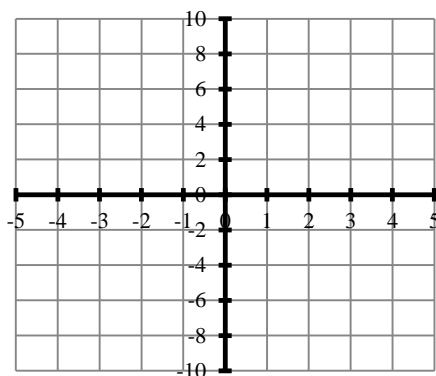
$$=$$



$$f(x) =$$

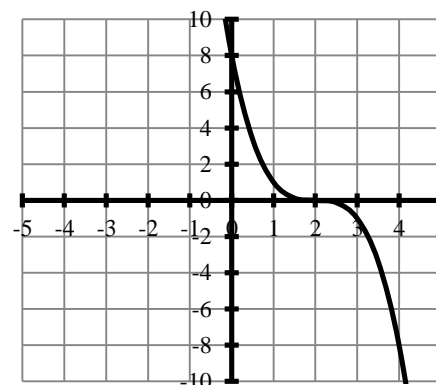
$$=$$

Aufgabe 5



$$f(x) = (x + 1)^2(x + 3)^2$$

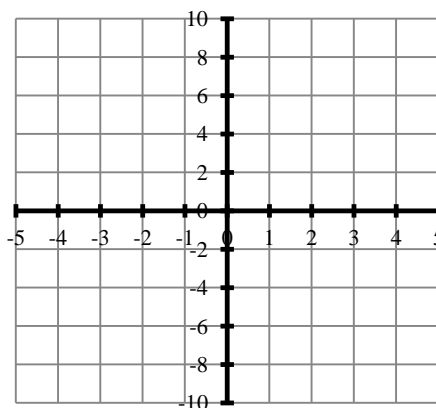
$$=$$



$$f(x) =$$

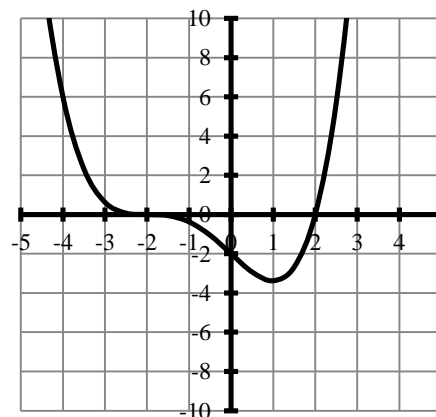
$$=$$

Aufgabe 6



$$f(x) = (x + 1)(x^2 - 4)$$

$$=$$

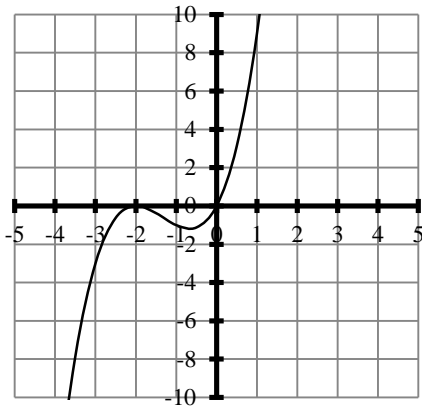


$$f(x) =$$

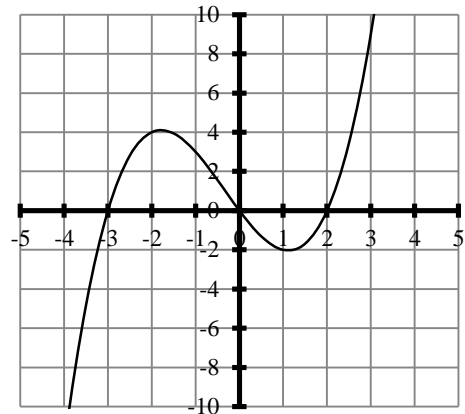
$$=$$

4.5. Lösungen zur Wiederholung ganzrationaler Funktionen

Aufgabe 1

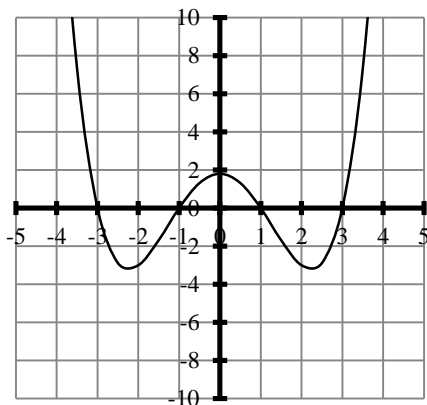


$$\begin{aligned}f(x) &= x(x+2)^2 \\ &= x^3 + 4x^2 + 4x\end{aligned}$$

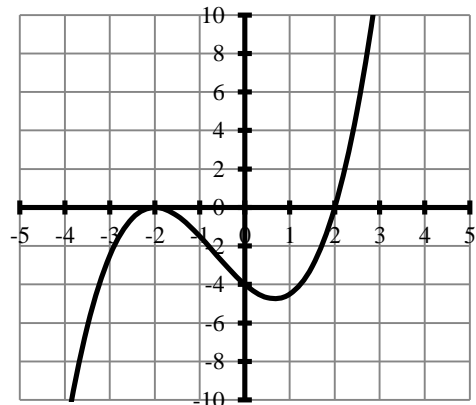


$$\begin{aligned}f(x) &= \frac{1}{2}(x+3)x(x-2) \\ &= \frac{1}{2}x^3 + \frac{1}{2}x^2 - 3x\end{aligned}$$

Aufgabe 2

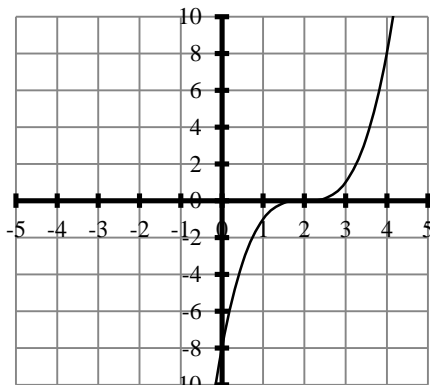


$$\begin{aligned}f(x) &= 0,2(x^2 - 1)(x^2 - 9) \\ &= 0,2x^4 - 2x^2 + 1,8\end{aligned}$$

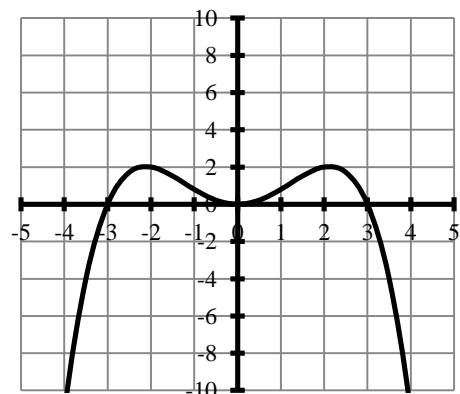


$$\begin{aligned}f(x) &= (x+2)^2(x-2) \\ &= \frac{1}{2}x^3 + x^2 - 2x - 4\end{aligned}$$

Aufgabe 3

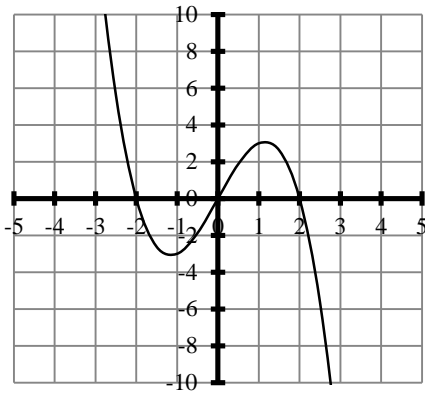


$$\begin{aligned}f(x) &= (x-2)^3 \\ &= x^3 - 6x^2 + 12x - 8\end{aligned}$$

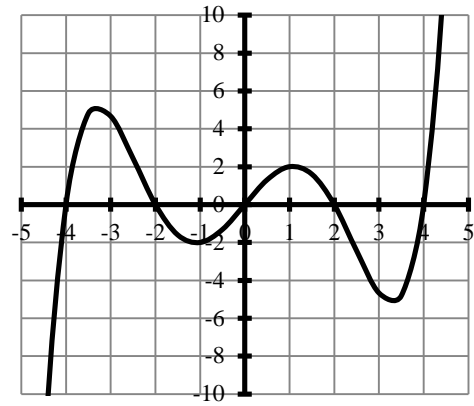


$$\begin{aligned}f(x) &= -0,1x^2(x+3)(x-3) \\ &= -0,1x^4 + 0,9x^2\end{aligned}$$

Aufgabe 4

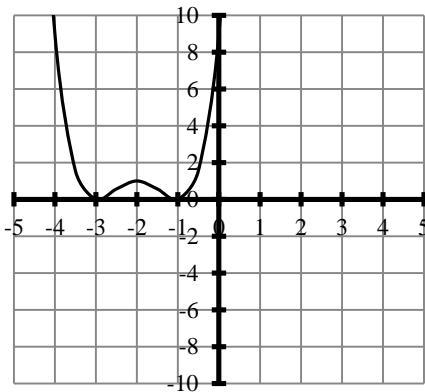


$$\begin{aligned} f(x) &= -x(x^2 - 4) \\ &= -x^3 + 4x \end{aligned}$$

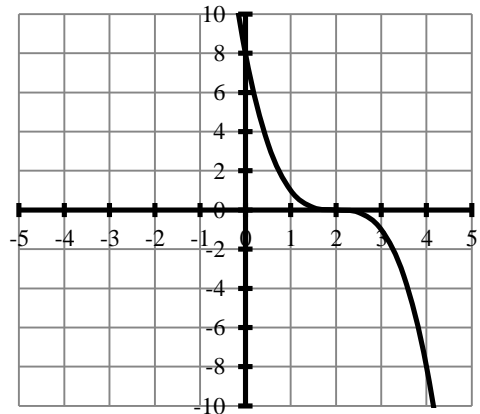


$$\begin{aligned} f(x) &= \frac{2}{45}(x+4)(x+2)x(x-2)(x+4) \\ &= \frac{2}{45}x^5 - \frac{8}{9}x^3 + \frac{128}{45}x \end{aligned}$$

Aufgabe 5

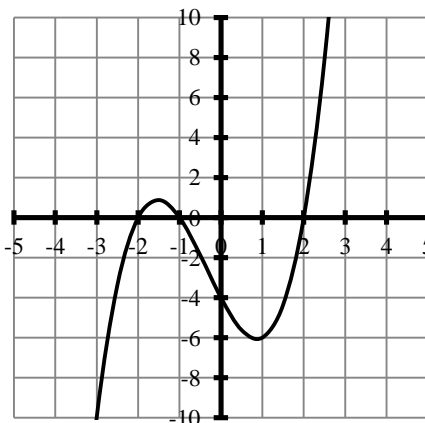


$$\begin{aligned} f(x) &= (x+1)^2(x+3)^2 \\ &= x^4 + 8x^3 + 22x^2 + 24x + 9 \end{aligned}$$

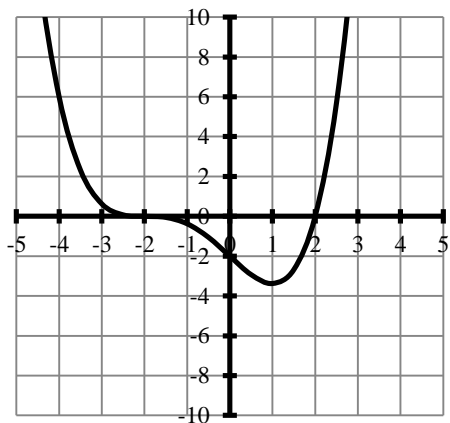


$$\begin{aligned} f(x) &= -(x-2)^3 \\ &= -x^3 + 6x^2 - 12x + 8 \end{aligned}$$

Aufgabe 6



$$\begin{aligned} f(x) &= (x+1)(x^2 - 4) \\ &= x^3 + x^2 - 4x - 4 \end{aligned}$$



$$\begin{aligned} f(x) &= \frac{1}{8}(x+2)^3(x-2) \\ &= \frac{1}{8}x^3 + \frac{1}{2}x^2 - 2x - 2 \end{aligned}$$