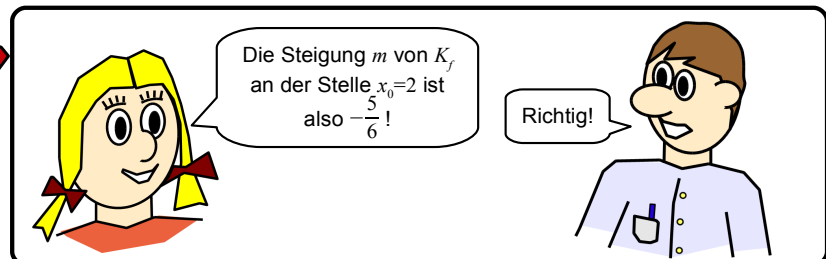
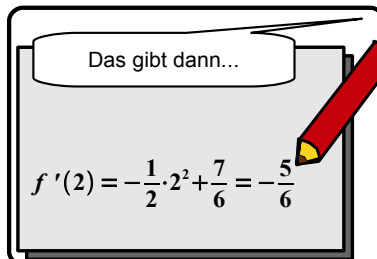
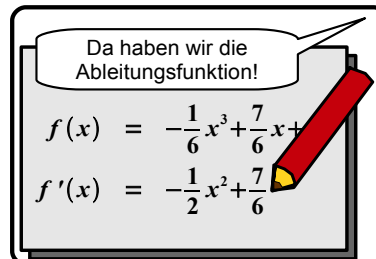
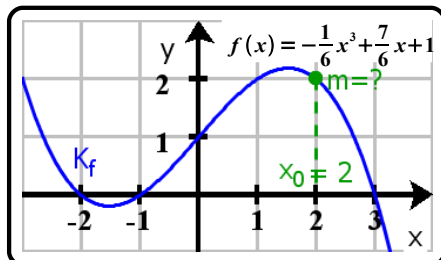
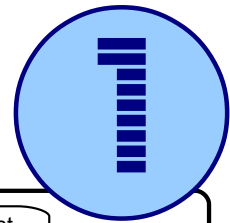


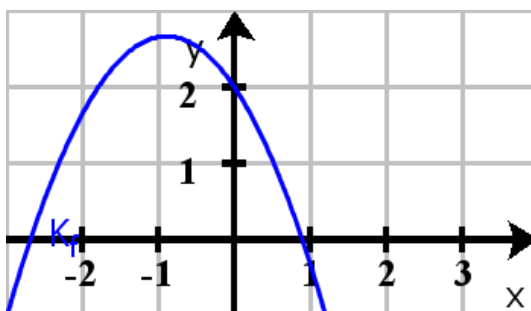
# Paula berechnet die Steigung an einer Stelle $x_0$



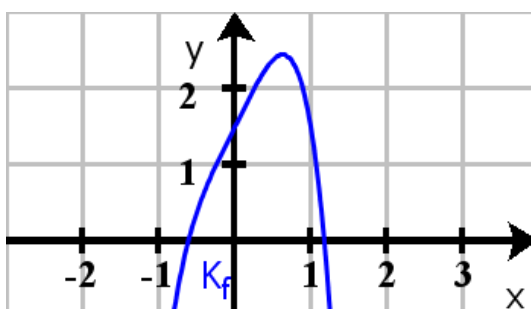
## Aufgaben

Zeichnen Sie das Schaubild ab. Berechnen Sie die Steigung an der Stelle  $x_0$  und markieren Sie die Stelle im Schaubild.

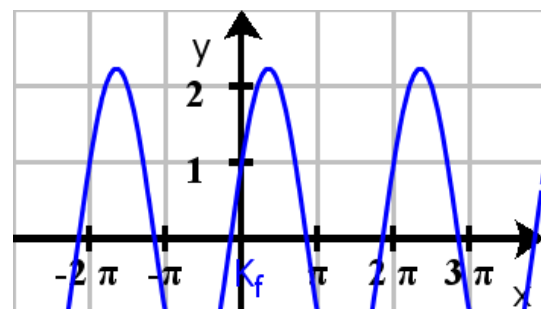
1)  $f(x) = -\frac{5}{6}x^2 - \frac{3}{2}x + 2$ ;  $x_0 = -1$



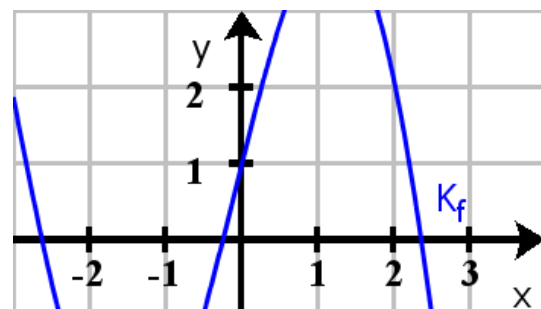
2)  $f(x) = -2x^4 + 2x$ ;  $x_0 = \frac{1}{2}$



3)  $f(x) = 2\sin(x) + \cos(x)$ ;  $x_0 = 2\pi$



4)  $f(x) = 5\sin(x) - 2e^{0.5x}$ ;  $x_0 = 0$

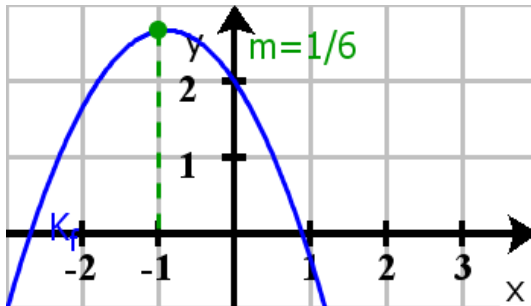


## Lösungen zur Station 1

$$1) f(x) = -\frac{5}{6}x^2 - \frac{3}{2}x + 2; x_0 = -1$$

$$f'(x) = -\frac{5}{3}x - \frac{3}{2}$$

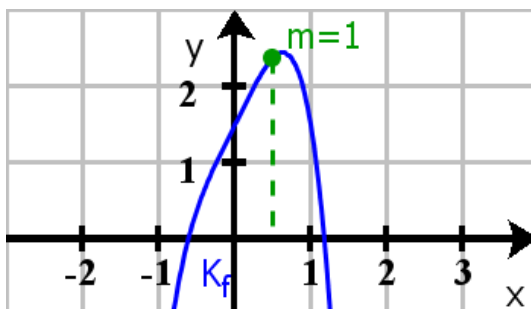
$$f'(-1) = -\frac{5}{3} \cdot (-1) - \frac{3}{2} = \frac{1}{6}$$



$$2) f(x) = -2x^4 + 2x + \frac{3}{2}; x_0 = \frac{1}{2}$$

$$f'(x) = -8x^3 + 2$$

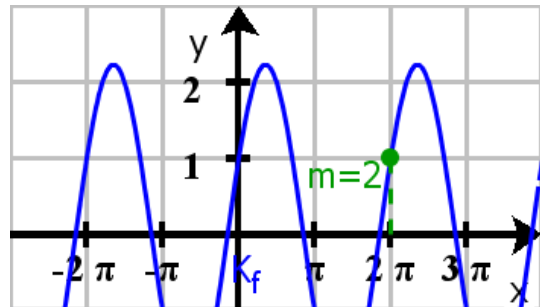
$$f'\left(\frac{1}{2}\right) = -8 \cdot \left(\frac{1}{2}\right)^3 + 2 = 1$$



$$3) f(x) = 2\sin(x) + \cos(x); x_0 = 2\pi$$

$$f'(x) = 2\cos(x) - \sin(x)$$

$$f'(2\pi) = 2\cos(2\pi) - \sin(2\pi) = 2$$



$$4) f(x) = 5\sin(x) - 2e^{0.5x}; x_0 = 0$$

$$f'(x) = 5\cos(x) - e^{0.5x}$$

$$f'(0) = 5\cos(0) - e^{0.5 \cdot 0} = 4$$

