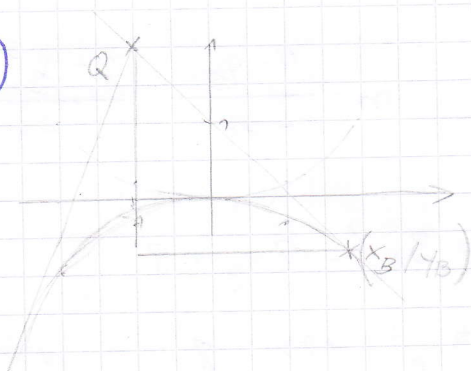


### Aufgaben Tangenten 3

1.)



$$m = \frac{2 - y_B}{-1 - x_B}$$

$$y_B = -\frac{1}{4}x_B^2$$

$$m = f'(x_B) = -\frac{1}{2}x_B$$

$$\frac{2 + \frac{1}{4}x_B^2}{-1 - x_B} = -\frac{1}{2}x_B$$

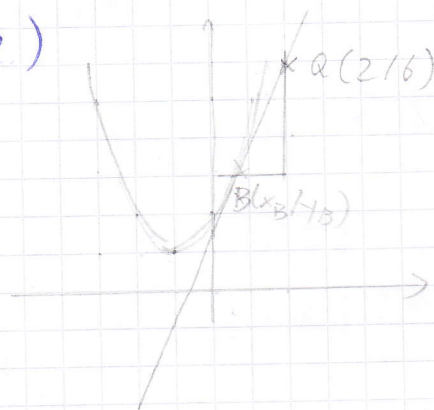
$$x_{B1} = -4 \quad y_{B1} = -4$$

$$x_{B2} = 2 \quad y_{B2} = -1$$

$$\underline{t_1: y = 2x + 4}$$

$$\underline{t_2: y = -x + 1}$$

2.)



$$m = \frac{6 - y_B}{2 - x_B} = \frac{6 - x_B^2 - 2x_B - 2}{2 - x_B} = \frac{4 - x_B^2 - 2x_B}{2 - x_B}$$

$$m = f'(x_B) = 2x_B + 2$$

$$\frac{4 - x_B^2 - 2x_B}{2 - x_B} = 2x_B + 2$$

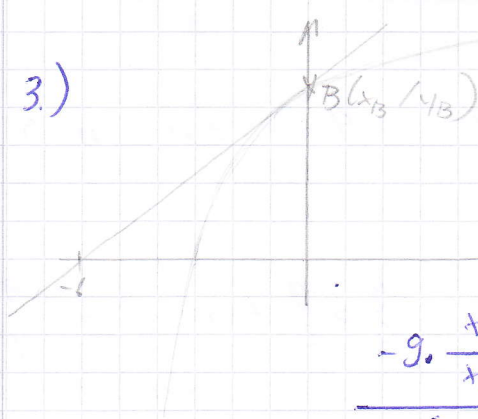
$$x_{B1} = 0 \quad y_{B1} = 2$$

$$x_{B2} = 4 \quad y_{B2} = 26$$

$$\underline{t_1: y = 2x + 2}$$

$$\underline{t_2: y = 10x - 14}$$

3.)



$$m = \frac{-y_B}{-6 - x_B} = \frac{-9 \frac{(x_B+3)}{(x_B+6)}}{-6 - x_B}$$

$$\rightarrow m = p'(x_B) = \frac{27}{(x_B+6)^2}$$

$$\frac{-9 \cdot \frac{x_B+3}{x_B+6}}{-6 - x_B} = \frac{27}{(x_B+6)^2}$$

$$x_B = 0$$

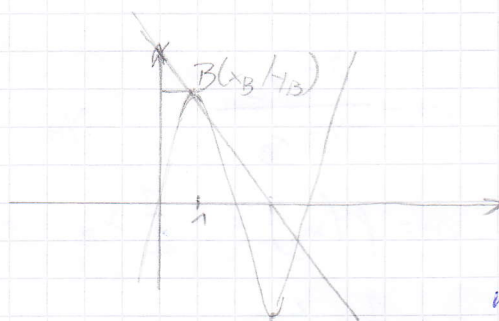
$$y_B = 4,5$$

a.)  $B(0/4,5)$

b.)  $y = 0,75x + 4,5$

c.)  $l = \sqrt{6^2 + 4,5^2} = \sqrt{36 + 20,25} = \sqrt{56,25} = \underline{\underline{7,5 \text{ m}}}$

4.)



$$m = \frac{4 - y_B}{-x_B} = \frac{4 - x_B^3 + 6x_B^2 - 8x_B}{-x_B}$$

$$m = 3x_B^2 - 12x_B + 8$$

$$\frac{4 - x_B^3 + 6x_B^2 - 8x_B}{-x_B} = 3x_B^2 - 12x_B + 8$$

$$x_{B,1} = -(\sqrt{3} - 1) \quad \text{entfällt, da} < 0$$

$$\underline{\underline{x_{B,2} = 1}}$$

$$x_{B,3} = \sqrt{3} + 1 \quad \text{entfällt, da} > 2$$

Fußweg:  $y = -x + 4$