

## 12 Tangenten durch den Nullpunkt

a)  $f'(x) = -4x$

$$y = -4x_0 \cdot (x - x_0) - 2x_0^2 - 2$$

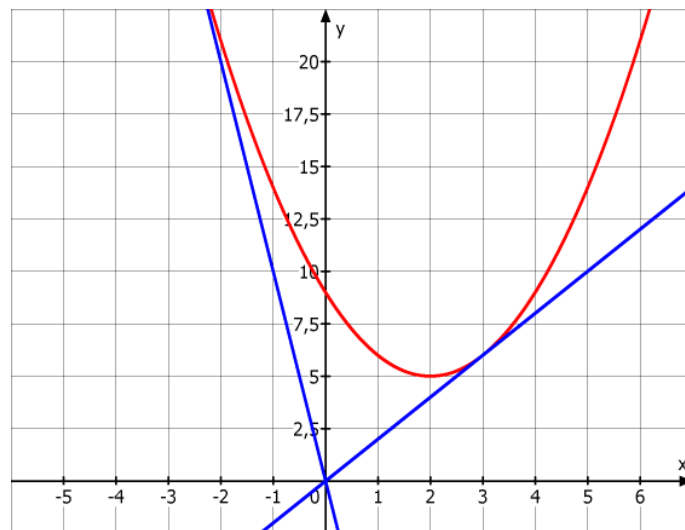
$$O(0|0) \text{ eingesetzt: } 0 = 4x_0^2 - 2x_0^2 - 2 \Rightarrow x_0 = -1 \vee x_0 = 1 \Rightarrow y_0 = -1$$

b)  $f'(x) = 2x - 4$

$$y = (2x_0 - 4) \cdot (x - x_0) + x_0^2 - 4x_0 + 9$$

$$O(0|0) \text{ eingesetzt:}$$

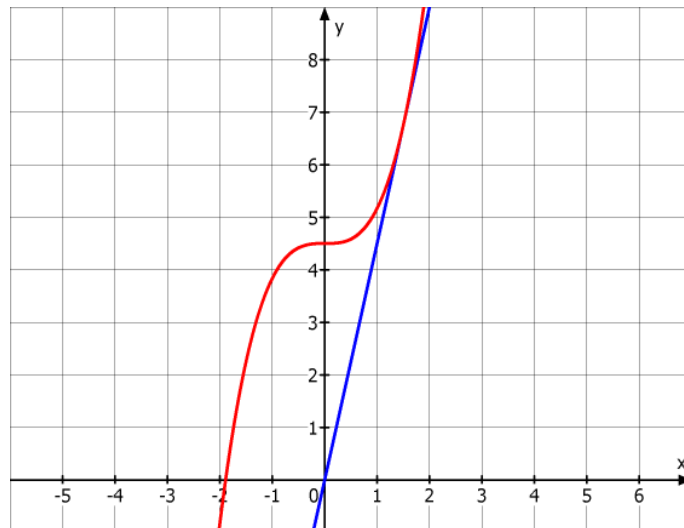
$$0 = -x_0^2 + 9 = 0 \Rightarrow x_0 = -3 \vee x_0 = 3 \Rightarrow y_0 = 30 \text{ bzw. } y_0 = 6$$



c)  $f'(x) = 2x^2$

$$y = -2x_0^2 \cdot (x - x_0) + \frac{2}{3}x_0^3 + \frac{9}{2}$$

$$O(0|0) \text{ eingesetzt: } 0 = -2x_0^3 + \frac{2}{3}x_0^3 + \frac{9}{2} = -\frac{4}{3}x_0^3 + \frac{9}{2} \Rightarrow x_0 = \frac{3}{2} \Rightarrow y_0 = \frac{27}{4}$$



$$\text{a) } f'(x) = -\frac{2}{x^2}$$

$$y = -\frac{2}{x_0^2} \cdot (x - x_0) + \frac{2}{x_0} - 3$$

$$O(0|0) \text{ eingesetzt: } 0 = \frac{2}{x_0} + \frac{2}{x_0} - 3 \Rightarrow x_0 = \frac{4}{3} \Rightarrow y_0 = -\frac{3}{3}$$

