

3. Bestimmen Sie rechnerisch den Extremwert folgender quadratischer Terme, sowie die entsprechende Belegung für x mithilfe der Formel:

$$T_1(x) = -1,25x^2 - 8x$$

$$T_3(x) = -0,5x^2 - 5x$$

$$T_2(x) = 1,25x^2 + 2,5x - 1$$

$$T_4(x) = -\frac{3}{2}x^2 + 8$$

$$T_1(x) = -1,25x^2 - 8x$$

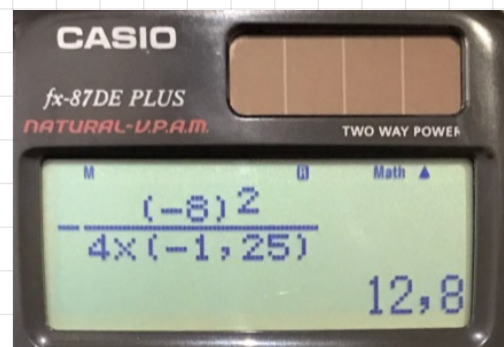
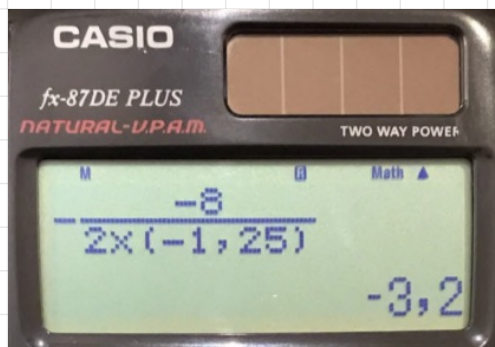
$$a = -1,25 \quad x = -\frac{b}{2a} = -\frac{-8}{2 \cdot (-1,25)} = \underline{\underline{-3,2}}$$

$$b = -8$$

$$c = 0$$

$$T_{\max} = c - \frac{b^2}{4a} = -\frac{(-8)^2}{4 \cdot (-1,25)} = \underline{\underline{12,8}}$$

$$\Rightarrow T_{\max} = 12,8 \quad \text{für } x = -3,2$$



$$T_2(x) = 1,25x^2 + 2,5x - 1$$

$$a = +1,25 \quad x = -\frac{b}{2a} = -\frac{2,5}{2 \cdot 1,25} = \underline{\underline{-1}}$$

$$b = 2,5$$

$$c = -1$$

$$T_{\min} = c - \frac{b^2}{4a} = -1 - \frac{2,5^2}{4 \cdot 1,25} = \underline{\underline{-2,25}}$$

$$\Rightarrow T_{\min} = -2,25 \quad \text{für } x = -1$$

$$T_3(x) = -0,5x^2 - 5x$$

$$a = -0,5 \quad x = -\frac{b}{2a} = -\frac{-5}{2 \cdot (-0,5)} = \underline{\underline{-5}}$$

$$b = -5$$

$$c = 0$$

$$T_{\max} = c - \frac{b^2}{4a} = -\frac{(-5)^2}{4 \cdot (-0,5)} = \underline{\underline{12,5}}$$

$$\Rightarrow T_{\min} = 12,5 \quad \text{für } x = -5$$

$$T_4(x) = -\frac{3}{2}x^2 + 8$$

$$a = -1,5 \quad x = -\frac{b}{2a} = -\frac{0}{2 \cdot (-1,5)} = \underline{\underline{0}}$$

$$b = 0$$

$$c = 8$$

$$T_{\max} = c - \frac{b^2}{4a} = 8 - \frac{0^2}{4 \cdot (-1,5)} = \underline{\underline{8}}$$

$$\Rightarrow T_{\max} = 8 \quad \text{für } x = 0$$