

Aufgabe i.6 a

$$f(x) = \sin(x)$$

$$\hookrightarrow f'(x) = \cos(x)$$

$$t_1: x_1 = \frac{\pi}{4}$$

$$\hookrightarrow \underline{f(x_1) = \frac{1}{\sqrt{2}}}; \quad \underline{f(x_1) \approx 0,707}$$

$$\underline{f'(x_1) = \frac{1}{\sqrt{2}}}; \quad \underline{f'(x_1) \approx 0,707}$$

$$\hookrightarrow t_1: y = \frac{1}{\sqrt{2}} \cdot x + b_1$$

$$\hookrightarrow \frac{1}{\sqrt{2}} = \frac{1}{\sqrt{2}} \cdot \frac{\pi}{4} + b_1 \quad \rightarrow \quad b_1 = \frac{1}{\sqrt{2}} - \frac{1}{\sqrt{2}} \cdot \frac{\pi}{4} \quad \rightarrow \quad \underline{b_1 \approx 0,152}$$

$$\underline{t_1: y = 0,707x + 0,152}$$

$$t_2: x_2 = \frac{3\pi}{4}$$

$$\hookrightarrow \underline{f(x_2) \approx 0,707}$$

$$\underline{f'(x_2) \approx -0,707}$$

$$\hookrightarrow t_2: y = -0,707 \cdot x + b_2$$

$$\hookrightarrow 0,707 = -0,707 \cdot \frac{3\pi}{4} + b_2 \quad \rightarrow \quad b_2 = 0,707 + 0,707 \cdot \frac{3\pi}{4} \quad \rightarrow \quad \underline{b_2 \approx 2,373}$$

$$\underline{t_2: y = -0,707x + 2,373}$$

Aufgabe i.6 b:

$$t_1 \cap t_2$$

$$\hookrightarrow 0,707x + 0,152 = -0,707x + 2,373 \quad \rightarrow \quad 1,414x = 2,221 \quad \rightarrow \quad \underline{x = 1,571}$$

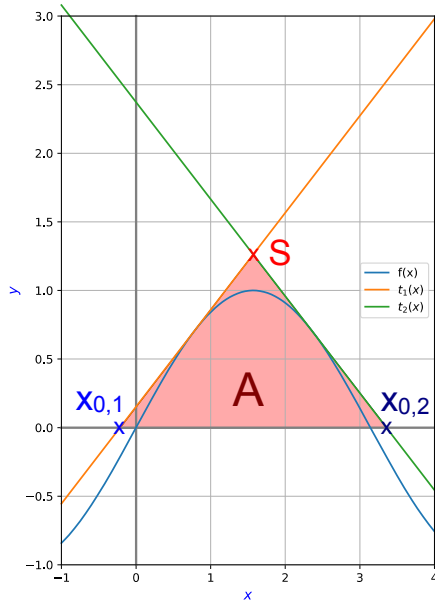
$$t_1: y = 0,707 \cdot 1,571 + 0,152$$

$$\hookrightarrow \underline{y = 1,263}$$

$$\underline{S(1,571 | 1,263)}$$

Aufgabe i.6 c

Skizze:

 $x_{0,1}$:

$$\hookrightarrow 0,707x + 0,152 = 0 \rightarrow 0,707x = -0,152 \rightarrow \underline{x_{0,1} \approx -0,215}$$

 $x_{0,2}$:

$$\hookrightarrow -0,707x + 2,373 = 0 \rightarrow -0,707x = -2,373 \rightarrow \underline{x_{0,2} \approx 3,356}$$

$$c = x_{0,2} - x_{0,1}$$

$$\hookrightarrow c = 3,356 - (-0,215) \rightarrow \underline{c \approx 3,571}$$

$$h_c = y_s - 0$$

$$\hookrightarrow \underline{h_c \approx 1,263}$$

$$A = \frac{1}{2} c \cdot h_c$$

$$\hookrightarrow A = \frac{1}{2} \cdot 3,571 \cdot 1,263 \rightarrow \underline{A = 2,255}$$

Arbeitsblatt Nr.

Datum:

Name:

Klasse:

Fach:

Aufgabe i.6 d:

$$f'(x)=0$$

$$\hookrightarrow \cos(x)=0 \rightarrow \underline{x_1=-\frac{3}{2}\pi} ; \underline{x_2=-\frac{1}{2}\pi} ; \underline{x_3=\frac{1}{2}\pi}$$

Aufgabe i.6 e:

$$f'(x)=\frac{1}{2}$$

$$\hookrightarrow \cos(x)=\frac{1}{2} \rightarrow x=\arccos\left(\frac{1}{2}\right) \rightarrow \underline{x \approx 1,047}$$

$$y=f(1,047) \rightarrow y=\sin(1,047) \rightarrow \underline{y \approx 0,866}$$

$$\underline{P(1,047 | 0,866)}$$