(9) $f(x) = x^2$ $\quad y = x + b$

$y = x^2$

$y = x + b$ $\quad y - y_0$

(10) $f'(1) = 1,3$

$\frac{d}{dx}\left(f(\sqrt{x})\right)$ at $x = 1$

(5) $f(x) = \begin{cases} \sin(2x) & x \le 0 \\ mx + b & x > 0 \end{cases}$

$\lim_{x \to 0^+} f(x) = \lim_{x \to 0^-} f(x)$

$\lim_{x \to 0^+} (mx + b) = \lim_{x \to 0^-} \sin(2x)$

$\longrightarrow b = 0$

$f'(x) = \begin{cases} 2\cos(2x) & x \le 0 \\ m & x > 0 \end{cases}$

$\lim_{x \to 0^+} m = \lim_{x \to 0^-} 2\cos(2x)$

$m = 2$

$y = 2x$