

Zadanie 6. Dla jakich wartości a, b punkt $(1, 3)$ jest punktem przegięcia wykresu funkcji:

$$f(x) = ax^3 + bx^2.$$

Rozwiązanie:

$$f'(x) = 3ax^2 + 2bx$$

$$f''(x) = 6ax + 2b$$

$$\begin{matrix} x=1 \\ y=3 \end{matrix}$$

$$b = \frac{783}{6}$$

$$8 \cdot 97$$

~ PUNKTOWE $z=0$

~~$f''(1) = 2$~~

~~$f''(0) = 0$~~

~~$f''(1) = 6a + 2b$~~

~~$f''(1,3) = 0$~~

~~$f''(1,3) = 7,8a + 2b$~~

~~$f(1) = 3$
 $f(1) = a + b$~~

~~$6ax + 2b = 0$
 $6a + 2b = 0$~~

~~$f''(1,3) = 0$~~

~~$7,8a + 2b = 0$~~

~~$7,8a = -2b \cdot (-0,6)$~~

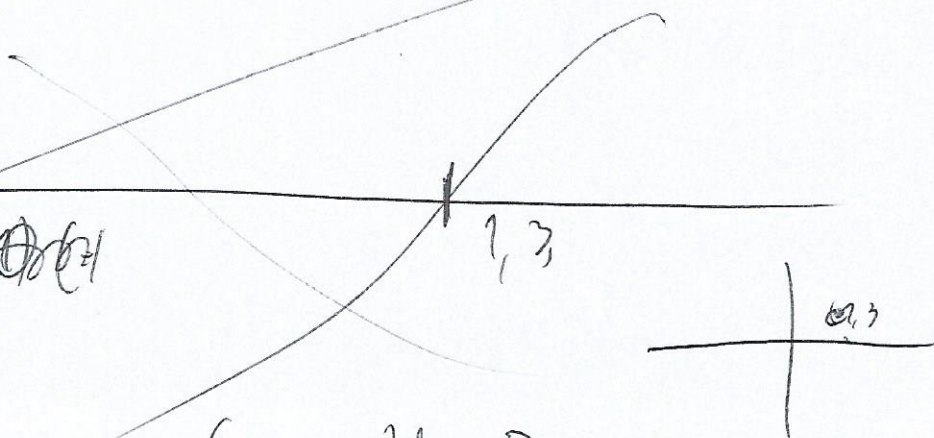
~~$f''(1,3) = 0$~~

~~$6a \cdot 1,3 + 2b = 0$~~

~~$-7,8a = -2b \quad | :2$~~

~~$b = 3,9a$~~

~~$6ax + 2b = 3$
 $6a + 2b = 0 \quad | \cdot 3a$~~



Zadanie 6. Dla jakich wartości a, b punkt $(1, 3)$ jest punktem przegięcia wykresu funkcji:

$$f(x) = ax^3 + bx^2.$$

Rozwiązanie:

$$f(1) = 3$$

$$a + b = 3$$

$$f'(x) = 3ax^2 + 2bx$$

$$f''(x) = 6ax + 2b$$

$$f''(1) = 0 \Leftrightarrow \begin{cases} 6a + 2b = 0 \\ 3a + b = 0 \end{cases}$$

$$\begin{cases} a + b = 3 \\ 3a + b = 0 \end{cases}$$

$$-2a = 3$$

$$a = -\frac{3}{2}$$

$$b = \frac{9}{2}$$

$$a = -\frac{3}{2}, \quad b = \frac{9}{2}$$