Zadatak 5. Odredi jednadžbu tangente na parabolu $y = x^2$ koja je paralelna s pravcem $y = -4x$.

Rješenje. $y = x^2$, $y = -4x \implies k = -4$;

$$k = \lim_{\Delta x \to 0} \frac{1}{\Delta x}[f(x_0 + \Delta x) - f(x_0)] = \lim_{\Delta x \to 0} \frac{1}{\Delta x}[(x_0 + \Delta x)^2 - x_0^2]$$

$$= \lim_{\Delta x \to 0} \frac{1}{\Delta x}[x_0^2 + 2x_0 \Delta x + \Delta x^2 - x_0^2] = \lim_{\Delta x \to 0}(2x_0 + \Delta x) = 2x_0$$

$$2x_0 = -4 \implies x_0 = -2, \quad y(x_0) = y(-2) = 4 \implies T(-2, 4)$$

$$y = kx + l \implies 4 = -4(-2) + l \implies 4 = 8 + l \implies l = -4$$

$$\implies y = -4x - 4.$$