Zadatak 39. U kojem omjeru okomica položena kroz ishodište koordinatnog sustava na pravac $4x + 2y - 15 = 0$ dijeli odsječak što ga na tom pravcu odsijecaju koordinatne osi?

Rješenje.

$$p \ \ldots \ 4x + 2y - 15 = 0 \implies y = -2x + \frac{15}{2}$$

$$q \perp p \implies k_q = -\frac{1}{k_p} = -\frac{1}{-2} = \frac{1}{2}$$

$$\{O\} \in q \implies y = 0 = \frac{1}{2}(x - 0) \implies \boxed{y = \frac{1}{2}x \ \ldots \ q}$$

$$\{A\} = p \cap p \implies -2x + \frac{15}{2} = \frac{1}{2}x \quad / \cdot 2$$

$$-4x + 15 = x$$

$$5x = 15$$

$$\boxed{x + 3}$$

$$y = \frac{1}{2} \cdot 3$$

$$\boxed{y = \frac{3}{2}} \implies \boxed{A\left(3, \frac{3}{2}\right)}$$

Segmentni oblik pravca p:

$$4x + 2y = 15 \quad / 15$$

$$\frac{x}{\frac{15}{4}} + \frac{y}{\frac{15}{2}}$$

$$m = \frac{15}{4} \implies \boxed{M\left(\frac{15}{4}, 0\right)}$$

$$n = \frac{15}{2} \implies \boxed{N\left(0, \frac{15}{2}\right)}$$

$$x_A = \frac{x_N + \lambda x_M}{1 + \lambda}$$

$$3 = \frac{0 + \lambda \cdot \frac{15}{4}}{1 + \lambda}$$

$$3 + 3\lambda = \tfrac{15}{4}\lambda \quad / \cdot 4$$

$$12 + 12\lambda = 15\lambda$$

$$3\lambda = 12$$

$$\boxed{\lambda = 4} \implies \frac{|NA|}{|AM|} = 4$$