

### Rovnice přímky

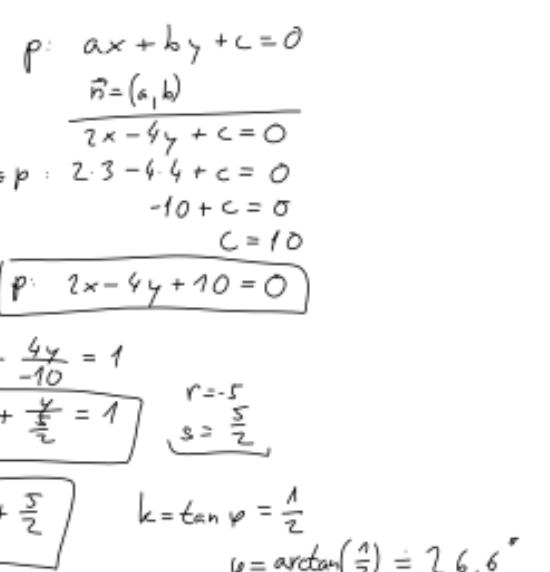
Napište vektorovou rovnici přímky  $p$  dané body  $A, B$

$$1) A = [-1, 2] \quad B = [3, 4]$$

$$\vec{u} = \vec{AB} = (4, 2)$$

$$p: X = B + t \cdot \vec{u}$$

$$\boxed{p: \begin{aligned} x &= 3 + 4t \\ y &= 4 + 2t \end{aligned}}$$



$$p = \{[3+4t, 4+2t], t \in \mathbb{R}\}$$

$$\vec{u}_p = (4, 2)$$

$$\vec{n}_p = (2, -4)$$

$$p: ax + by + c = 0$$

$$\vec{n} = (a, b)$$

$$2x - 4y + c = 0$$

$$\text{Bep } p: 2 \cdot 3 - 4 \cdot 4 + c = 0$$

$$-10 + c = 0$$

$$c = 10$$

$$\boxed{p: 2x - 4y + 10 = 0}$$

$$\text{usekou: } p: \frac{2x}{10} - \frac{4y}{10} = 1$$

$$\boxed{p: \frac{x}{5} + \frac{y}{5} = 1}$$

$$r = -\frac{5}{2}$$

$$s = \frac{5}{2}$$

$$\text{směrnice: } p: y = \frac{1}{2}x + \frac{5}{2}$$

$$k = \tan \varphi = \frac{1}{2}$$

$$\varphi = \arctan\left(\frac{1}{2}\right) = 26,6^\circ$$

Přímlha  $q$ :  $A, \vec{u}$ . Rozhodněte, zda  $C \in q$ .

$$A = [1, 1] \quad \vec{u} = (2, 1) \quad C = [-5, 2]$$

$$q: x = 1 + 2t$$

$$y = 1 + t$$

$$-5 = 1 + 2t \rightarrow t = -3 \quad \checkmark \Rightarrow C \in q$$

$$-2 = 1 + t \rightarrow t = -3$$

$$D = [2, 1]$$

$$2 = 1 + 2t \rightarrow t = \frac{1}{2}$$

$$1 = 1 + t \rightarrow t = 0$$

$$X \Rightarrow D \notin q$$

Najdete \* přímku  $q$  tak, aby  $q \perp p$  a  $C \in q$

$$p = \{[2+t, 1+\frac{5}{2}t], t \in \mathbb{R}\}$$

$$C = [2, 2]$$

$$\vec{u}_p = (1, \frac{5}{2})$$

\* Obecnou rovnici

$$p \perp q \Rightarrow \vec{n}_q = \vec{u}_p$$

$$\vec{n}_q = (1, \frac{5}{2})$$

$$q: ax + by + c = 0$$

$$x + \frac{5}{2}y + c = 0$$

$$C \in q: 2 + \frac{5}{2} \cdot 2 + c = 0$$

$$c = -7$$

$$\boxed{q: 2 + \frac{5}{2}y - 7 = 0} \quad / \cdot 2$$

$$4 + 5y - 14 = 0$$

Najdete vektorovou rovnici  $p$ .

$$A \in p, \quad p \perp x \quad A = [3, -2]$$

$$\boxed{p: x = 3}$$

$$p$$

$$A \in p \quad \vec{u} = (1, 0)$$

$$p: 1 \cdot x + 0 \cdot y + c = 0$$

$$A \in p: \frac{x+c}{3+c} = 0 \quad \frac{3+c}{c+3} = 0 \quad c = -3$$

$$\boxed{p: x - 3 = 0}$$

$$\boxed{p: x = 3 + 0t}$$

$$\boxed{y = -2 + 1t} \quad \cdot 1 \quad \cdot 0 \quad \left\{ \begin{array}{l} x + 0y = 3 + 0t \\ x = 3 \end{array} \right.$$

$$p: x + 0y = 3 + 0t$$

$$p: x = 3$$

$A \in p \quad A = [1, 2\sqrt{3}] \quad$ , směrový úhel  $\varphi = 120^\circ$

$p \ni A$

$$p: y = k \cdot x + q$$

$$k = \tan \varphi = \tan \frac{2\pi}{3} = \frac{\sin \frac{2\pi}{3}}{\cos \frac{2\pi}{3}} = -\frac{\sqrt{3}}{2}$$

$$p: y = -\sqrt{3} \cdot x + q$$

$$k = -\sqrt{3}$$

$$A \in p: 2\sqrt{3} = -\sqrt{3} \cdot 1 + q$$

$$q = 3\sqrt{3}$$

$$\boxed{p: y = -\sqrt{3}x + 3\sqrt{3}}$$

$$p: \frac{x}{3} + \frac{y}{3\sqrt{3}} = 1$$

$$p: \sqrt{3}x + y - 3\sqrt{3} = 0$$

$$p: x = 1 + t$$

$$y = \sqrt{3} - \sqrt{3}t$$

$$\Rightarrow \boxed{p: \sqrt{3}x + y - 3\sqrt{3} = 0}$$

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