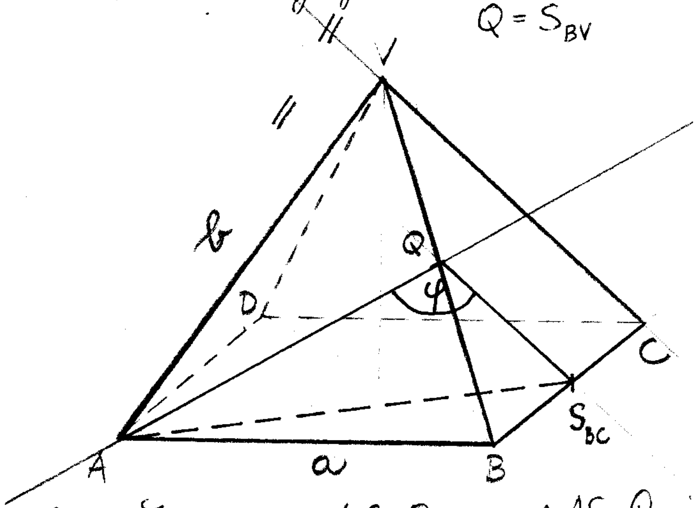
Př 8: prav. 4-boký jehlan $ABCDV$
$Q = S_{BV}$

$a = 5\,\text{cm} = |AB|$
$b = 6\,\text{cm} = |AV|$



$\varphi(AQ, CV) = ?$

$CV \parallel QS_{BC}$

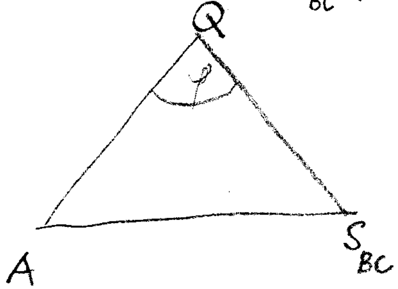
$\varphi = \varphi(AQ, QS_{BC})$

φ určíme z $\triangle AS_{BC}Q$; $\triangle AS_{BC}Q$ je obecný (není ani rr, rs ani pravoúhlý)

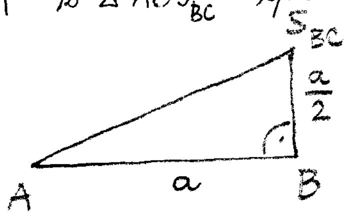
$\Downarrow$

φ z kosinové věty

musím ale dopočítat strany $\triangle$



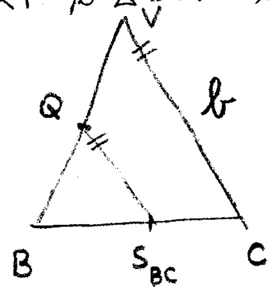
① $|AS_{BC}|$: z $\triangle ABS_{BC}$ ∈ spodní podstava jehlanu



$|AS_{BC}| = \sqrt{\frac{a^2}{4} + a^2} = \frac{a}{2}\sqrt{5}$

$|AS_{BC}| \doteq 5{,}59$
$= 2{,}5 \cdot \sqrt{5}$

② $|S_{BC}Q|$: z $\triangle BCV$ = boční stěna

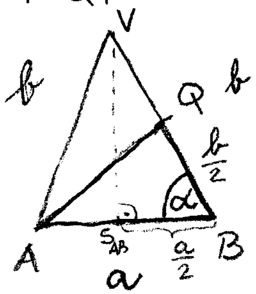


QS_{BC} je střední příčka v $\triangle$

$\Downarrow$

$|QS_{BC}| = \frac{b}{2} = 3\,\text{cm}$

③ $|AQ|$: z $\triangle ABV$ = boční stěna = rr $\triangle$



$\cos\alpha = \frac{\frac{a}{2}}{b} = \frac{a}{2b}$

$\cos\alpha = \frac{5}{12}$

kos. věta

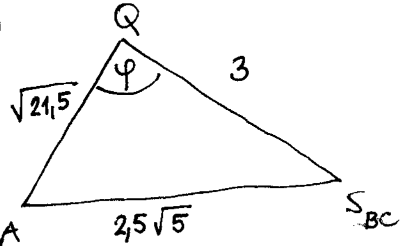
$|AQ|^2 = \left(\frac{b}{2}\right)^2 + a^2 - 2a \cdot \frac{b}{2} \cdot \cos\alpha$

$|AQ|^2 = 9 + 25 - \cancel{2} \cdot 5 \cdot \cancel{3} \cdot \frac{5}{\cancel{12}\ 2}$

$|AQ|^2 = 34 - 12{,}5 = 21{,}5$

$|AQ| = \sqrt{21{,}5}$

z $\triangle AS_{BC}Q$



$(2{,}5 \cdot \sqrt{5})^2 = (\sqrt{21{,}5})^2 + 3^2 - 2 \cdot 3 \sqrt{21{,}5} \cdot \cos\varphi$

$6 \cdot \sqrt{21{,}5}\,\cos\varphi = 21{,}5 + 9 - 5 \cdot 6{,}25$

$\cos\varphi = \frac{30{,}5 - 31{,}25}{6 \cdot \sqrt{21{,}5}} = \frac{-0{,}75}{6 \cdot \sqrt{21{,}5}} \doteq -0{,}027$

$\varphi \doteq 91°33'$

ale odchylka musí být úhel ostrý nebo pravý

náš úhel je tupý ⇒ odchylka = $180° - \varphi$

$\varphi = 180° - 91°33' = 88°27'$