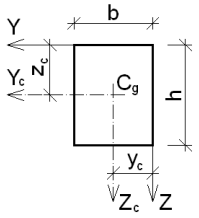
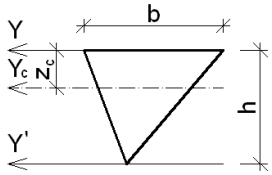
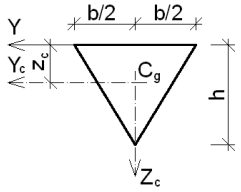
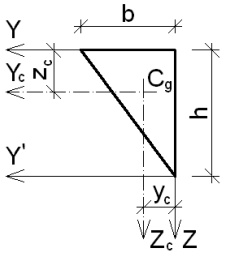
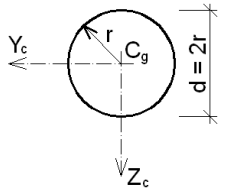
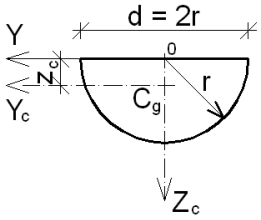
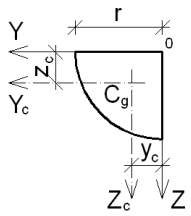
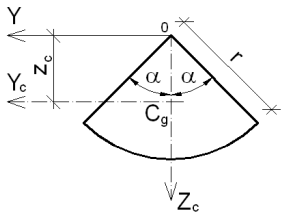
Geometrické charakteristiky rovinných obrazců

Tvar obrazce	Plocha A	Souřadnice těžiště	Axiální momenty setrvačnosti	Deviační momenty setrvačnosti
	$A = bh$	$y_c = \frac{b}{2}$ $z_c = \frac{h}{2}$	$\boldsymbol{I}_{yC} = \frac{bh^3}{12}, \quad \boldsymbol{I}_{zC} = \frac{hb^3}{12}$ $I_y = \frac{bh^3}{3}, \quad I_z = \frac{hb^3}{3}$	$\boldsymbol{D}_{yCzC} = 0$ $D_{yz} = \frac{b^2h^2}{4}$
	$A = \frac{bh}{2}$	$z_c = \frac{h}{3}$	$\boldsymbol{I}_{yC} = \frac{bh^3}{36}$ $I_y = \frac{bh^3}{12}$ $I_{y'} = \frac{bh^3}{4}$	
	$A = \frac{bh}{2}$	$z_c = \frac{h}{3}$	$\boldsymbol{I}_{yC} = \frac{bh^3}{36}, \quad \boldsymbol{I}_{zC} = \frac{hb^3}{48}$ $I_y = \frac{bh^3}{12}$	$\boldsymbol{D}_{yCzC} = 0$
	$A = \frac{bh}{2}$	$y_c = \frac{b}{3}$ $z_c = \frac{h}{3}$	$\boldsymbol{I}_{yC} = \frac{bh^3}{36}, \quad \boldsymbol{I}_{zC} = \frac{hb^3}{36}$ $I_y = \frac{bh^3}{12}, \quad I_z = \frac{hb^3}{12}$ $I_{y'} = \frac{bh^3}{4}$	$\boldsymbol{D}_{yCzC} = -\frac{b^2h^2}{72}$ $D_{yz} = \frac{b^2h^2}{24}$ $D_{y'z} = -\frac{b^2h^2}{8}$ Znaménka!

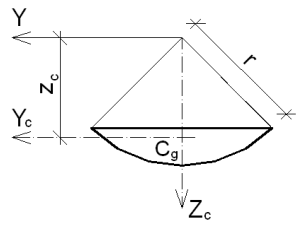
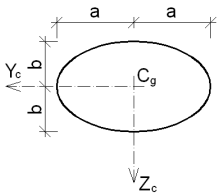
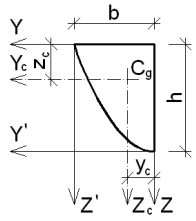
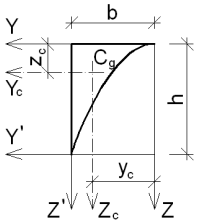
(pokračování na další stránce)

(pokračování tabulky)

Tvar obrazce	Plocha A	Souřadnice těžiště	Axiální momenty setrvačnosti	Deviační momenty setrvačnosti
	$A = \pi r^2 = \frac{\pi d^2}{4}$		$\boldsymbol{I}_yC = \boldsymbol{I}_zC = \frac{\pi r^4}{4} = \frac{\pi d^4}{64}$	$\boldsymbol{D}_{yCzC} = 0$
	$A = \frac{\pi r^2}{2} = \frac{\pi d^2}{8}$	$z_c = \frac{4r}{3\pi} = \frac{2d}{3\pi}$	$\boldsymbol{I}_{yC} = \left(\frac{\pi}{8} - \frac{8}{9\pi}\right) r^4 = \doteq 0,1098r^4$ $\boldsymbol{I}_{zC} = \frac{\pi r^4}{8} = \frac{\pi d^4}{128}$ $I_y = I_z = \frac{\pi r^4}{8} = \frac{\pi d^4}{128}$	$\boldsymbol{D}_{yCzC} = 0$
	$A = \frac{\pi r^2}{4} = \frac{\pi d^2}{16}$	$y_c = z_c = \frac{4r}{3\pi} = \frac{2d}{3\pi}$	$\boldsymbol{I}_{yC} = \boldsymbol{I}_{zC} = \left(\frac{\pi}{16} - \frac{4}{9\pi}\right) r^4 \doteq 0,0549r^4$ $I_y = I_z = \frac{\pi r^4}{16}$	$\boldsymbol{D}_{yCzC} = = \left(\frac{1}{8} - \frac{4}{9\pi}\right) r^4 \doteq -0,0165r^4$ $D_{y'z} = \frac{r^4}{8}$ Znaménka!
	$A = \widehat{\alpha} r^2 = \text{arc}\alpha\, r^2 = \frac{\alpha^o}{180^o}\pi r^2$	$z_c = \frac{2}{3} r \frac{\sin\alpha}{\widehat{\alpha}}$	$\boldsymbol{I}_{yC} = r^4 \left(\frac{2\widehat{\alpha} + \sin 2\alpha}{8} - \frac{4\sin^2\alpha}{9\widehat{\alpha}}\right)$ $\boldsymbol{I}_{zC} = \frac{r^4}{8}(2\widehat{\alpha} - \sin 2\alpha)$ $I_y = \frac{r^4}{8}(2\widehat{\alpha} + \sin 2\alpha)$	$\boldsymbol{D}_{yCzC} = 0$

(pokračování na další stránce)

(pokračování tabulky)

Tvar obrazce	Plocha A	Souřadnice těžiště	Axiální momenty setrvačnosti	Deviační momenty setrvačnosti
	$A = r^2\left(\widehat{\alpha} - \frac{\sin 2\alpha}{2}\right)$	$z_c = \frac{\frac{4r\sin^3\alpha}{3}}{\left(2\widehat{\alpha} - \sin 2\alpha\right)}$	$\boldsymbol{I}_{yC} = \frac{r^4}{36\left(\widehat{\alpha} - \sin\alpha\cos\alpha\right)}$ $\left(9\widehat{\alpha}^2 - 16 + 39\cos^2\alpha - \right.$ $-18\widehat{\alpha}\cos^3\alpha\sin\alpha -$ $\left. -2\cos^6\alpha - 21\cos^4\alpha\right)$ $\boldsymbol{I}_{zC} = \frac{r^4}{48}\left(12\widehat{\alpha} - 8\sin 2\alpha + \right.$ $\left. + \sin 4\alpha\right)$	$\boldsymbol{D}_{yCzC} = 0$
	$A = \pi ab$		$\boldsymbol{I}_{yC} = \frac{\pi}{4}ab^3$ $\boldsymbol{I}_{zC} = \frac{\pi}{4}ba^3$	$\boldsymbol{D}_{yCzC} = 0$
	$A = \frac{2}{3}bh$	$y_c = \frac{3}{8}b$ $z_c = \frac{2}{5}h$	$\boldsymbol{I}_{yC} = \frac{8}{175}bh^3, \quad \boldsymbol{I}_{zC} = \frac{19}{480}hb^3$ $I_y = \frac{16}{105}bh^3, \quad I_z = \frac{2}{15}hb^3$ $I_{y'} = \frac{2}{7}bh^3, \quad I_{z'} = \frac{3}{10}hb^3$	
	$A = \frac{bh}{3}$	$y_c = \frac{3}{4}b$ $z_c = \frac{3}{10}h$	$\boldsymbol{I}_{yC} = \frac{37}{2100}bh^3, \quad \boldsymbol{I}_{zC} = \frac{1}{80}hb^3$ $I_y = \frac{1}{21}bh^3, \quad I_z = \frac{1}{5}hb^3$ $I_{y'} = \frac{19}{105}bh^3, \quad I_{z'} = \frac{1}{30}hb^3$	