

Tečny kuželoseček

	rovnice kuželoseky	rovnice tečny v bod $T = [x_T; y_T]$
Kružnice:	$x^2 + y^2 = r^2$	$x \cdot x_T + y \cdot y_T = r^2$
	$(x - m)^2 + (y - n)^2 = r^2$	$(x - m)(x_T - m) + (y - n)(y_T - n) = r^2$
	$x^2 + y^2 + ax + by + c = 0$	$x \cdot x_T + y \cdot y_T + \frac{a}{2}(x + x_T) + \frac{b}{2}(y + y_T) + c = 0$
Elipsa:	$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$	$\frac{x \cdot x_T}{a^2} + \frac{y \cdot y_T}{b^2} = 1$
	$\frac{(x - m)^2}{a^2} + \frac{(y - n)^2}{b^2} = 1$	$\frac{(x - m)(x_T - m)}{a^2} + \frac{(y - n)(y_T - n)}{b^2} = 1$
	$\frac{x^2}{b^2} + \frac{y^2}{a^2} = 1$	$\frac{x \cdot x_T}{b^2} + \frac{y \cdot y_T}{a^2} = 1$
	$\frac{(x - m)^2}{b^2} + \frac{(y - n)^2}{a^2} = 1$	$\frac{(x - m)(x_T - m)}{b^2} + \frac{(y - n)(y_T - n)}{a^2} = 1$
	$x^2 + y^2 + ax + by + c = 0$	$x \cdot x_T + y \cdot y_T + \frac{a}{2}(x + x_T) + \frac{b}{2}(y + y_T) + c = 0$
Hyperbola:	$\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$	$\frac{x \cdot x_T}{a^2} - \frac{y \cdot y_T}{b^2} = 1$
	$\frac{(x - m)^2}{a^2} - \frac{(y - n)^2}{b^2} = 1$	$\frac{(x - m)(x_T - m)}{a^2} - \frac{(y - n)(y_T - n)}{b^2} = 1$
	$-\frac{x^2}{b^2} + \frac{y^2}{a^2} = 1$	$-\frac{x \cdot x_T}{b^2} + \frac{y \cdot y_T}{a^2} = 1$
	$-\frac{(x - m)^2}{b^2} + \frac{(y - n)^2}{a^2} = 1$	$-\frac{(x - m)(x_T - m)}{b^2} + \frac{(y - n)(y_T - n)}{a^2} = 1$
	$x^2 + y^2 + ax + by + c = 0$	$x \cdot x_T + y \cdot y_T + \frac{a}{2}(x + x_T) + \frac{b}{2}(y + y_T) + c = 0$
Parabola:	$y^2 = \pm 2px$	$y \cdot y_T = \pm p(x + x_T)$
	$(y - n)^2 = \pm 2p(x - m)$	$(y - n)(y_T - n) = \pm p(x + x_T - 2m)$
	$x^2 = \pm 2py$	$x \cdot x_T = \pm p(y + y_T)$
	$(x - m)^2 = \pm 2p(y - n)$	$(x - m)(x_T - m) = \pm p(y + y_T - 2n)$
	$y^2 + ax + by + c = 0$	$y \cdot y_T + \frac{a}{2}(x + x_T) + \frac{b}{2}(y + y_T) + c = 0$
	$x^2 + ax + by + c = 0$	$x \cdot x_T + \frac{a}{2}(x + x_T) + \frac{b}{2}(y + y_T) + c = 0$

Jaká bude rovnice tečny v bod T ?

$$\frac{(x-3)^2}{16} + \frac{(y-2)^2}{4} = 1; T = [2; 1]$$

$$\frac{(x-3)(x_T-3)}{16} + \frac{(y-2)(y_T-2)}{4} = 1$$

$$\frac{(x-3)(2-3)}{16} + \frac{(y-2)(1-2)}{4} = 1$$

$$\frac{(x-3)(-1)}{16} + \frac{(y-2)(-1)}{4} = 1$$

$$-\frac{(x-3)}{16} - \frac{(y-2)}{4} = 1 \quad | \cdot 16$$

$$-(x-3) - 4(y-2) = 16$$

$$-x + 3 - 4y + 8 = 16$$

$$-4y + 11 = x + 16$$

$$-4y = x + 16 - 11$$

$$-4y = x + 5 \quad | :(-4)$$

$$y = -\frac{x}{4} - \frac{5}{4}$$