

Krumning af en plan kurve.

$$\kappa = \frac{d\phi}{ds}$$

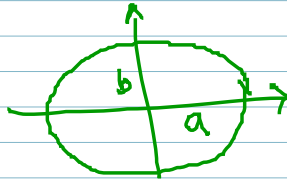
$$\underline{r}: [a, b]$$

$$\underline{r}'(t) \neq 0 \text{ for all } t$$

$$\underline{r}(t) = (x(t), y(t))$$

$$\kappa(t) = \frac{\det \begin{pmatrix} x' & x'' \\ y' & y'' \end{pmatrix}}{V(t)^3} = \frac{x'y'' - y'x''}{(x'^2 + y'^2)^{3/2}}$$

Eks: $\underline{r}(t) = (a \cos t, b \sin t)$



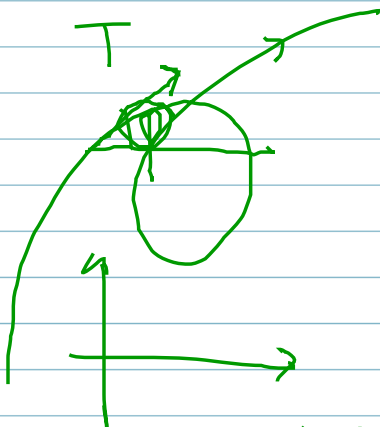
$$\underline{r}'(t) = (-a \sin(t), b \cos(t))$$

$$\underline{r}''(t) = (-a \cos(t), -b \sin(t))$$

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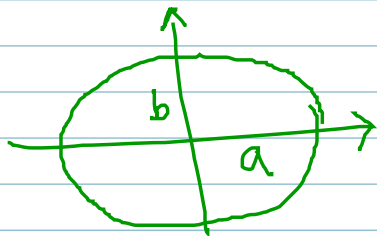


$$\underline{r}'(t) \neq 0 \text{ for all } t$$

$$\underline{r}(t) = (x(t), y(t))$$

$$\kappa(t) = \frac{\det \begin{pmatrix} x' & x'' \\ y' & y'' \end{pmatrix}}{v(t)^3} = \frac{x'y'' - y'x''}{(\sqrt{x'^2 + y'^2})^3}$$

Eks: $\underline{r}(t) = (a \cos t, b \sin t)$



$$\underline{r}'(t) = (-a \sin t, b \cos t)$$

$$\underline{r}''(t) = (-a \cos t, -b \sin t)$$

$$\begin{aligned}
 |\Gamma'(t)| &= \sqrt{a^2 \sin^2 t + b^2 \cos^2 t} \\
 &= \sqrt{a^2(1 - \cos^2 t) + b^2 \cos^2 t} \\
 &= \sqrt{a^2 + (b^2 - a^2) \cos^2 t}
 \end{aligned}$$

$$\begin{aligned}
 J(t) &= \frac{(-a \sin t)(-b \sin t) - (b \cos t)(-a \cos t)}{(a^2 + (b^2 - a^2) \cos^2 t)^{3/2}} \\
 &= \frac{ab \sin^2 t + ab \cos^2 t}{(\quad)^{3/2}}
 \end{aligned}$$

$$= \frac{ab}{(a^2 + (b^2 - a^2) \cos^2 t)^{3/2}}$$

