ANA U3 2.) $fan(x): \mathbb{R}(\frac{\pi}{2} + \pi \mathbb{Z}) \rightarrow \mathbb{R}$) ges tom', tem" $(\tan(x))' = \left(\frac{\sin(x)}{\cos(x)}\right)' = \frac{\cos(x)\cdot\cos(x) - \sin(x)\cdot(-\sin(x))}{(\cos(x))^2} = \frac{(\sin(x))^2 + (\cos(x))^2}{(\cos(x))^2}$ = (cs(x))2 $(+an(x))'' = (cos(x))^2 - 1 \cdot ((cos(x))^2)' = -2 cos(x) \cdot (-sin(x))$ (as (x)) 4) ges: Hullstellen von Jan form(x)=0 (=> sin(x)=0 (=> sin(x)=0 (=>]keZ: x=7k .) 27: fan ist out jedem Sutervall in R (2+ # 2) strong monston wachsend $(\tan(x))' = \frac{1}{(\cos(x))^2} = (\frac{1}{\cos(x)})^2 > 0$ => streng monoton wachsend lim tom (+) = lim Sin(+) = lim Sin(+) · lim cos(+) = 1 · lim x = 00 lim tom (+) = lim Sin(+) = lim sin(+) · lim (5(+) = -1. lim x = -00 => fan: (- =, =) -> R ... hijektiv ·) ges: (arctan) y = fam(x) x = archam(y) $\arctan'(y) = \arctan(\tan(x)) = \frac{1}{\tan(x)} = (\cos(x))^2 = \cos(\arctan(y))^2$ (Salt 7.1.12)