

$$B = -110^\circ = -1.919862 \dots \text{ Rad}$$

$$\hat{v} = \begin{bmatrix} -.34202 \\ -.93969 \end{bmatrix}$$

$$m = v_y/v_x = 2.74747 \dots$$

$$b = 6871$$

$$y = mx + b$$

intersect with

$$x^2 + y^2 = (6870.9)^2$$

$$x^2 + m^2x^2 + b^2 + 2mbx - 6870.9^2 = 0$$

$$A = 1 + m^2$$

$$B = 2mb \text{ different } B \text{ than bearing!}$$

$$C = b^2 - 6870.9^2$$

$$x = \frac{-B \pm \sqrt{B^2 - 4AC}}{2A}$$

$$\left. \begin{aligned} x &= -0.036397 \dots \\ y &= 6870.8999 \dots \end{aligned} \right\} \text{ intersection with circle}$$

$$\hat{n} = \frac{[+.036397; -6870.8999]}{\text{length}}$$

$$\hat{n} = \begin{bmatrix} .0000052 \dots \\ -.9999999 \dots \end{bmatrix}$$

$$\cos \theta_1 = \hat{n} \cdot \hat{v}$$

$$\theta_1 = .34907 \dots \text{ Rad}$$

$$n_1 \sin \theta_1 = n_2 \sin \theta_2$$

$$\sin \theta_2 = \frac{n_1}{n_2} \sin \theta_1$$

$$\theta_2 = \theta_1 !$$

