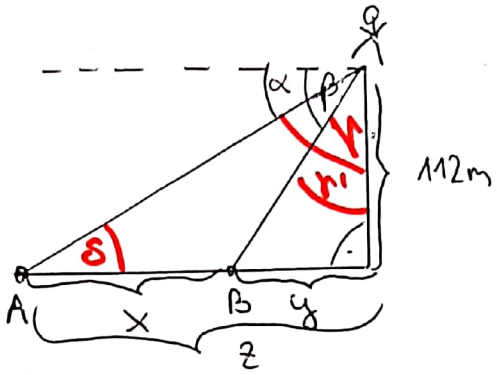
1)



$\alpha = 29{,}5°$ $\beta = 44{,}48°$

$h = 112\,m$, Ges. $\overline{AB}$

$\gamma = 90° - \alpha = 90° - 29{,}5° = 60{,}5°$

$\delta = 180° - 90° - \gamma = 29{,}5°$ $\quad \gamma' = 90° - \beta = 90° - 44{,}48° = 45{,}52°$

$\tan(\gamma') = \frac{y}{112}$ $\quad | \cdot 112$

$y = \tan(45{,}52°) \cdot 112$

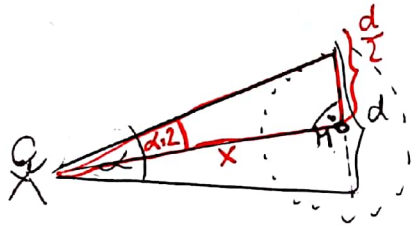
$y = 114\,m$

$\tan(\delta) = \frac{112}{z}$

$z = \frac{112}{\tan(\delta)} \approx 198m$

$x = z - y = 84m$

2)



$\alpha = 0{,}51°$, $\frac{\alpha}{2} = 0{,}255°$

$d = 3476\,km$, $\frac{d}{2} = 1738\,km$

$\tan\left(\frac{\alpha}{2}\right) = \frac{d/2}{x}$

$x = \frac{d/2}{\tan(\frac{\alpha}{2})} = 390\,507{,}5\,km$

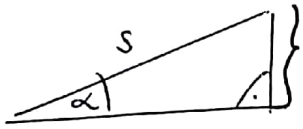
3) a) $\tan(0{,}12) = \alpha$; $\alpha = 6{,}84°$

b) $h = 280m$

$\sin(\alpha) = \frac{h}{s}$ $\quad s = \frac{h}{\sin(\alpha)} = 2351\,m$

c) $\beta = 25°$ $\quad \tan(25°) = 0{,}47 = 47\%$

d) $s = 13\,km = 13000\,m$



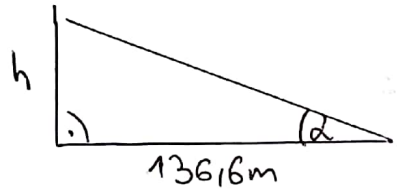
1036m [2036m - 1000m]

$\sin(\alpha) = \frac{1036}{13000} = 0{,}08 \Rightarrow \alpha = 4{,}59°$

$\Rightarrow \tan(\alpha) = 0{,}08 = 8\%$

Ja, die Straße aus c) ist steiler!

4)



$\alpha = 36{,}27°$

$\tan(\alpha) = \frac{h}{136{,}6} \quad | \cdot 136{,}6$

$h = \tan(36{,}27°) \cdot 136{,}6$

$h = 100{,}23\,m$