Fundamentals of Applied Electromagnetics 6e
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From Eq. (8.118a), \( z' = \frac{\pi z}{\beta a} + z \).
Hence, \( \theta' = \tan^{-1}(\pi/\beta a) \).

From Eq. (8.118b), \( z'' = -\frac{\pi z}{\beta a} + z \).
Hence, \( \theta'' = -\tan^{-1}(\pi/\beta a) \).

(a) \( z' \) and \( z'' \) propagation directions

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Beamwidth $\beta$

$R$

$\Delta x = \beta R$
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