AND A

Choosing The Perfect Map

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GLOBES

www.vectortemplates.com

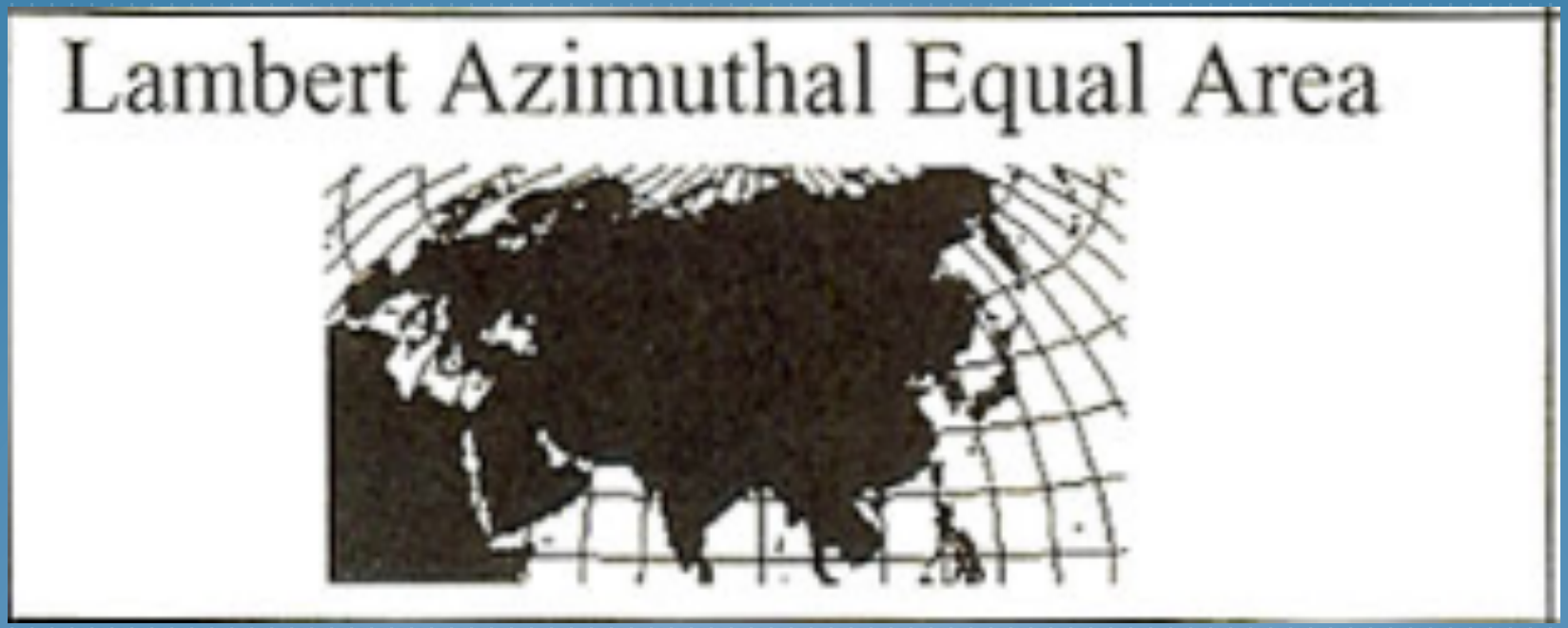
PROPERTIES OF MAPS

- Distance
- Direction
- Area
- Conformity

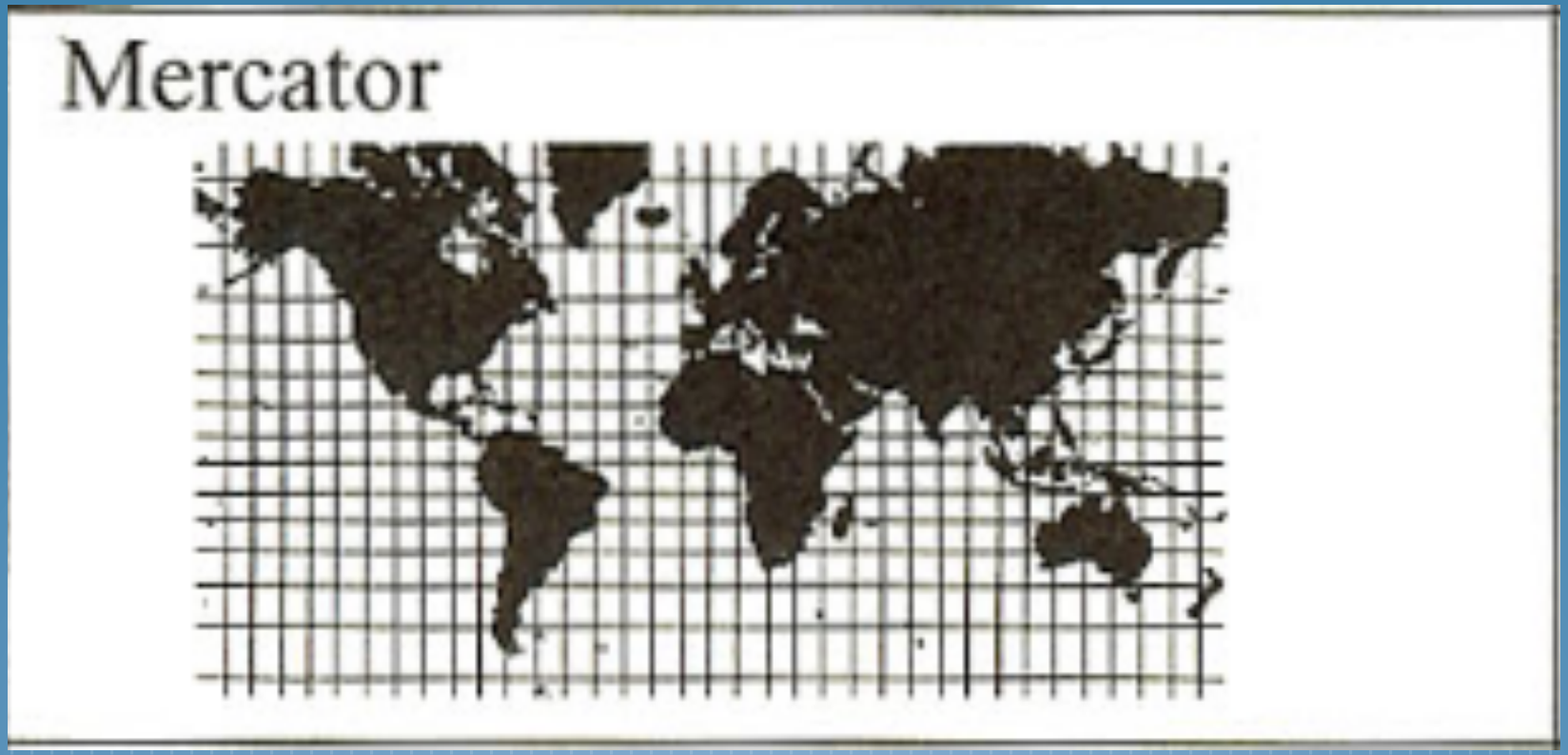
THE EQUIDISTANCE CONIC PROJECTION

LAMBERT CONFORMAL CONIC

LAMBERT AZIMUTHAL EQUAL AREA

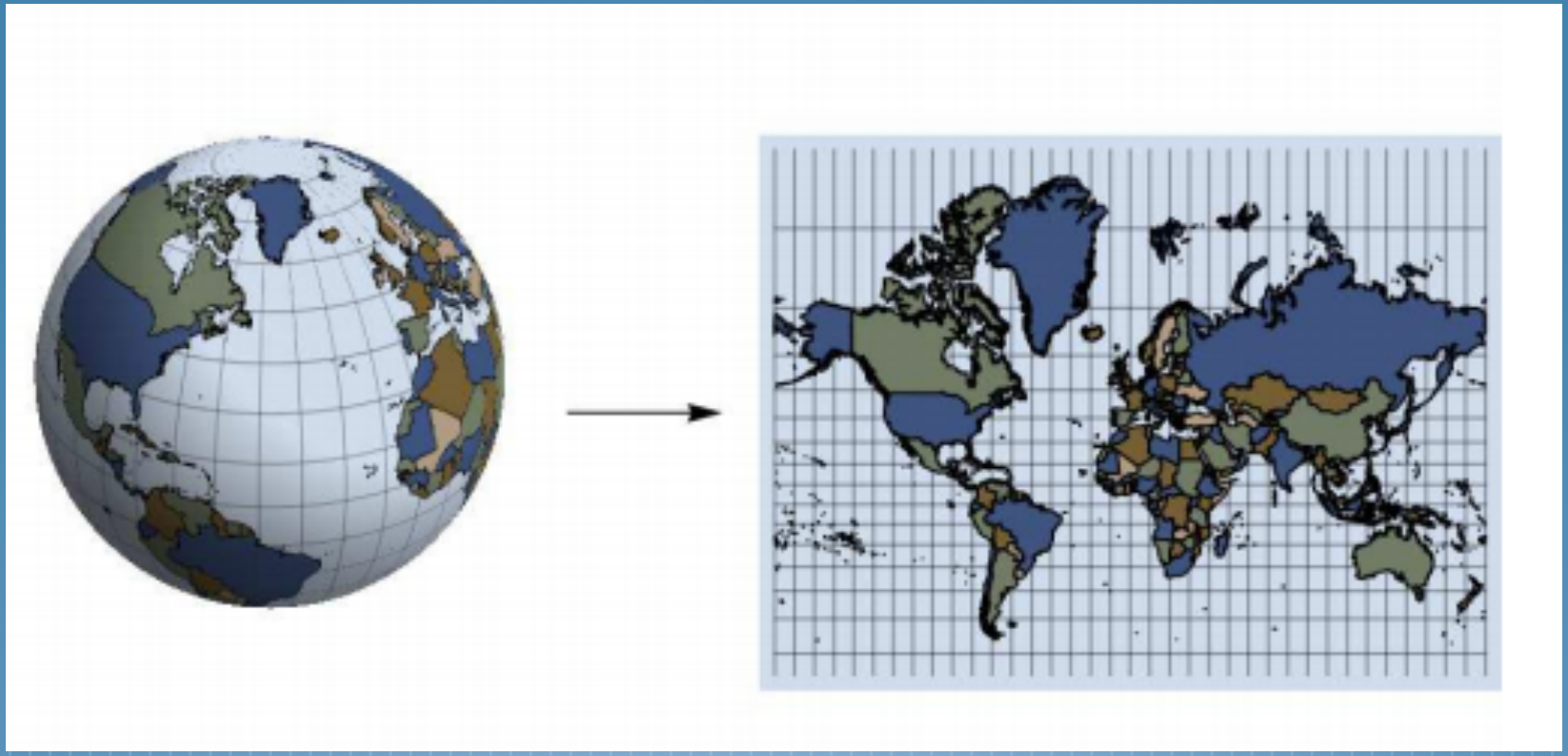


MERCATOR



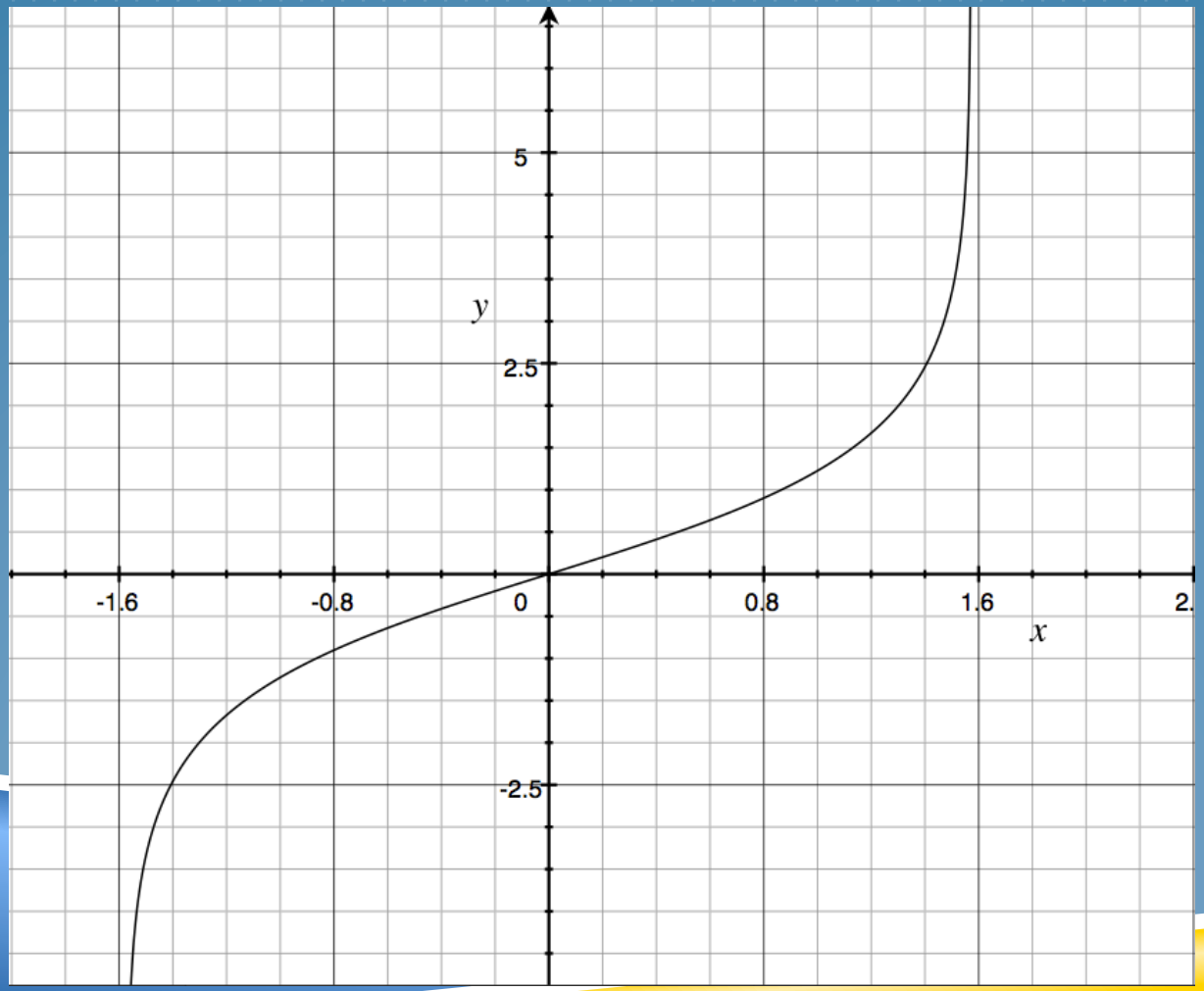
CYLINDRICAL PROJECTIONS

THE MERCATOR MAP PROJECTION

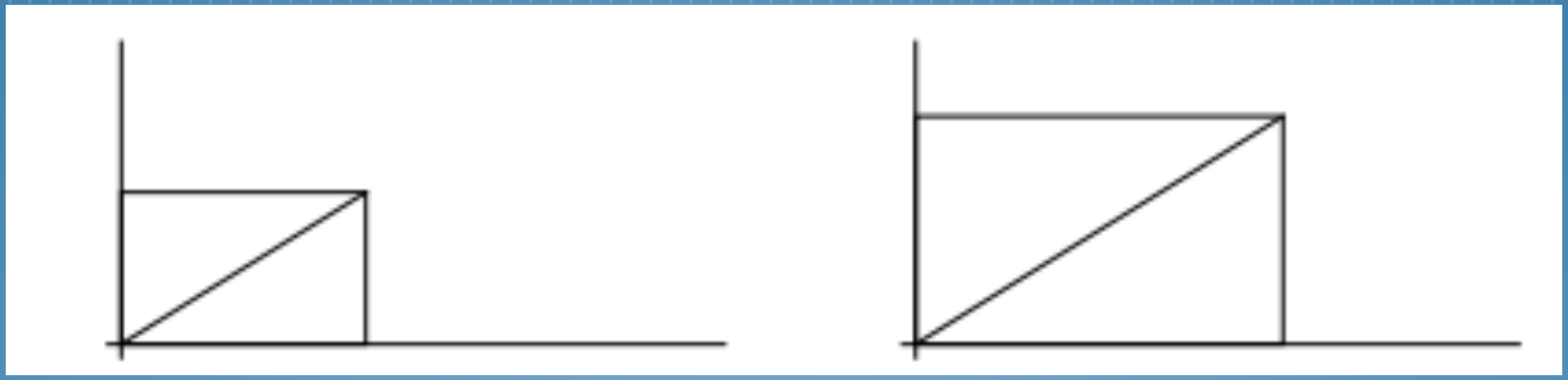


ACTUAL DISTORTION

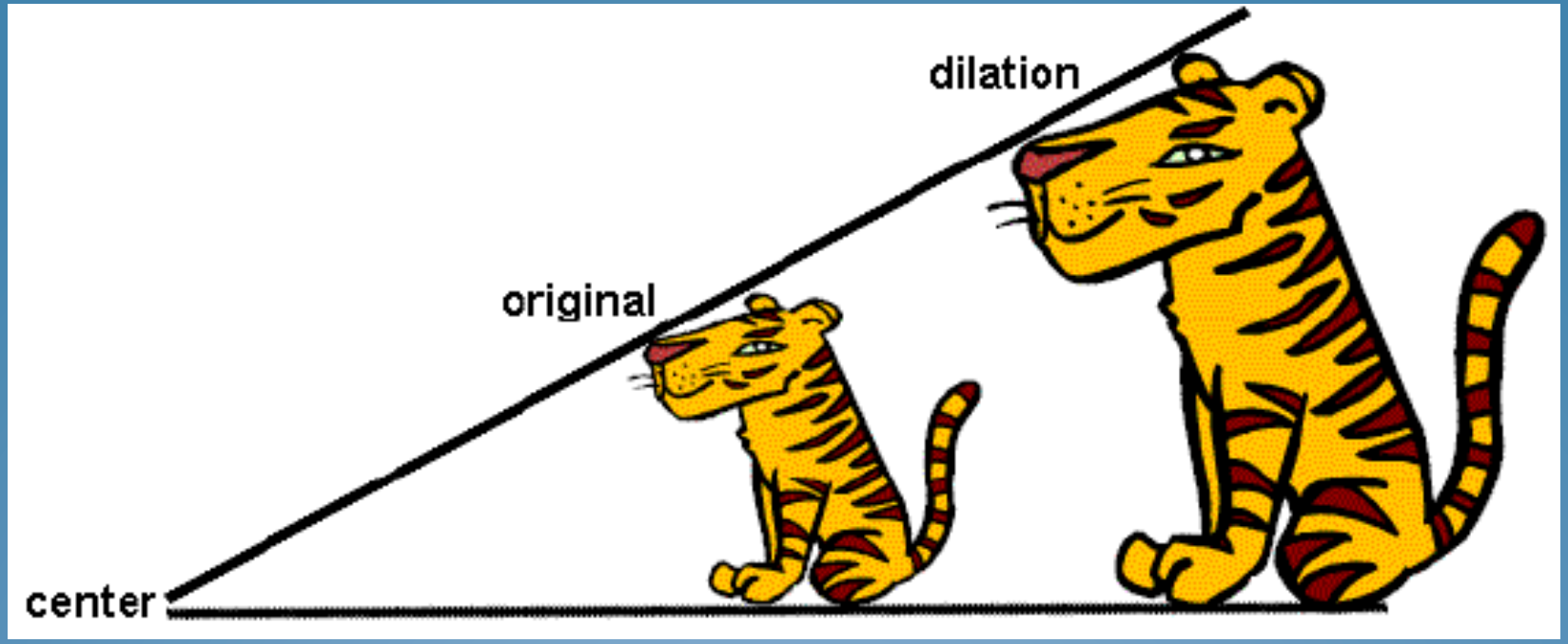
$$\ln(|\sec(\alpha) + \tan(\alpha)|)$$



PROVING MERCATOR MAP IS CONFORMAL



SCALE FACTOR



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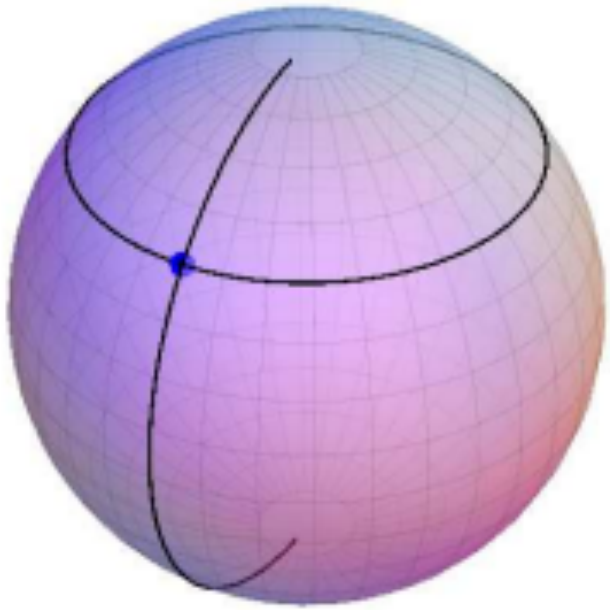
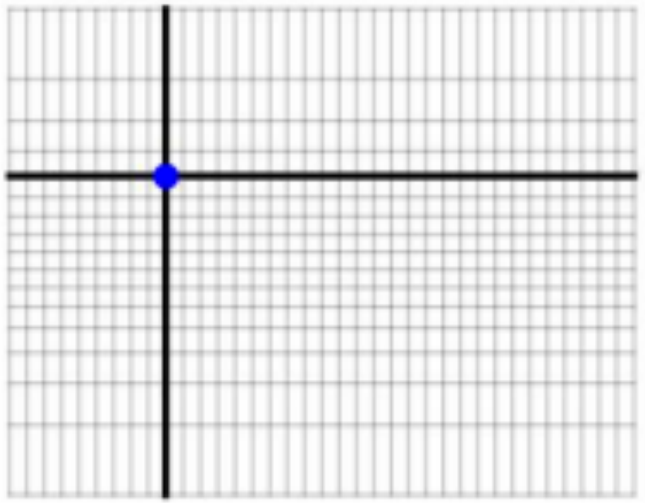
SCALE FACTOR FOR MERCATOR PROJECTION

$$M_\alpha \text{ and } M_\beta$$

SCALING FACTOR ALONG PARALLEL AND MERIDIAN





$$M_\alpha = \frac{2\pi}{2\pi\cos(\alpha)} = \sec(\alpha)$$

$$M_\beta = h'(\alpha)$$

SETTING UP TO PROVE CONFORMALITY

- Find the scaling factors along the parallel and meridian M_α and M_β
- Take partial derivatives

$$T_\alpha = (x_\alpha, y_\alpha) \text{ and } T_\beta = (x_\beta, y_\beta)$$

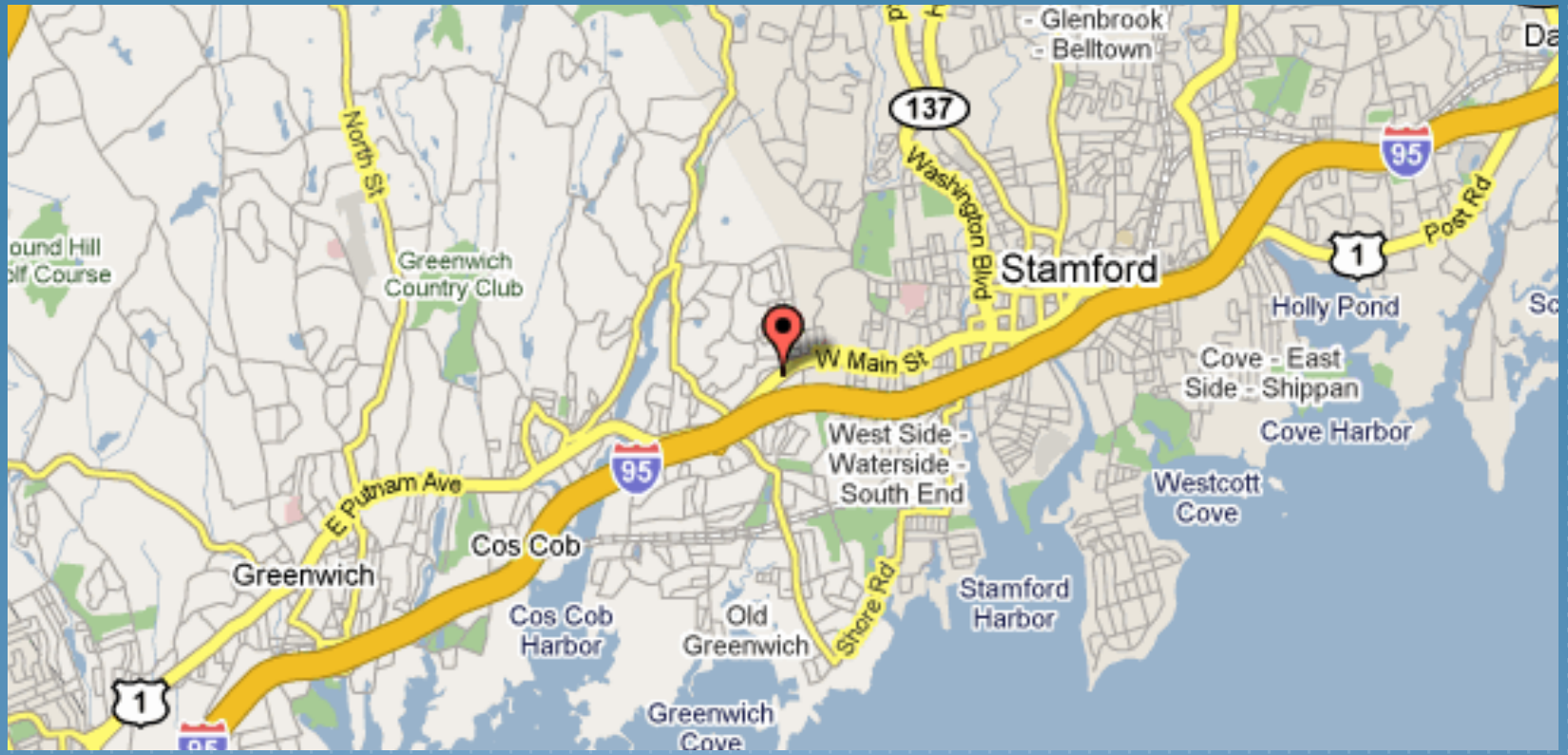
- Set up the correct scaling factors

$$M_\alpha = sec(\alpha)||T_\beta|| \text{ and } M_\beta = ||T_\alpha||$$

PROVING CONFORMALITY

For the general map projection $T(\alpha, \beta) = (x(\alpha, \beta), y(\alpha, \beta))$ will be conformal if and only if $\sec(\alpha)||T_\beta|| = ||T_\alpha||$

GOOGLE MAPS



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FUTURE OF MAPS

www.gpsreview.net

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