Section 7.1: cont'd

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11:55 AM

examples: simplify

$$\frac{\csc(-x)}{\cot(-x)}$$

$$\frac{\frac{1}{\sin(-x)}}{\frac{\cos(-x)}{\sin(-x)}}$$ } single fraction

$$\frac{1}{\sin(-x)} \cdot \frac{\sin(-x)}{\cos(-x)}$$

$$\frac{1}{\cos(-x)}$$

$$\frac{1}{\cos x} \quad \text{or} \quad \sec x$$ } either

$$\frac{1+\tan y}{1+\cot y}$$

Method #1:

$$\frac{1+\tan y}{\left(\frac{\tan y}{\tan y}\right)1+\frac{1}{\tan y}}$$

$$\frac{1+\tan y}{\text{single fraction}}$$

$$\frac{1+\tan y}{\dfrac{\tan y+1}{\tan y}}$$

single fraction

$$(1+\tan y)\cdot\frac{\tan y}{\tan y+1}$$

$$\frac{\tan y}{}$$

Method #2:

$$\frac{1+\tan y}{1+\cot y}$$

$$\frac{\left(\frac{\cos y}{\cos y}\right)1+\frac{\sin y}{\cos y}}{}$$

$$\frac{\left(\frac{\sin y}{\sin y}\right)1+\frac{\cos y}{\sin y}}{}$$

$$\frac{\frac{\cos y+\sin y}{\cos y}}{\frac{\sin y+\cos y}{\sin y}}$$

$$\frac{\cos y+\sin y}{\cos y}\cdot\frac{\sin y}{\sin y+\cos y}$$

$$\frac{\sin y}{\cos y}$$

$$\tan y$$

other uses of trig identities:

rationalize the denominator:

$$\sqrt{\frac{1-\cos B}{1+\cos B}}$$

Method #1

$$\sqrt{\frac{1-\cos B}{1+\cos B}}\sqrt{\frac{1+\cos B}{1+\cos B}}$$

$$\sqrt{\frac{1-\cos^2 B}{(1+\cos B)^2}}$$

note: $\sin^2 B + \cos^2 B = 1$

$\sin^2 B = 1 - \cos^2 B$

$$\frac{\sqrt{1-\cos^2 B}}{1+\cos B}$$

$$\sqrt{\frac{\sin^2 B}{(1+\cos B)^2}}$$

$$\frac{\sin B}{1+\cos B}$$

Method #2

$$\sqrt{\frac{1-\cos B}{1+\cos B}}\sqrt{\frac{1-\cos B}{1-\cos B}}$$

$$\sqrt{\frac{(1-\cos B)^2}{1-\cos^2 B}}$$

$$\sqrt{\frac{(1-\cos B)^2}{\sin^2 B}}$$

$$\frac{1-\cos B}{\sin B}$$