UNIVERSIDADE FEDERAL DA GRANDE DOURADOS
Prof$^{\underline{a}}$. Karla Lima

Fundamentos da Matemática II 15 de Abril de 2018

(1) Simplifique as seguintes expressões:

(a) $\cos(2x)$

(b) $\operatorname{sen}\left(\frac{\pi}{2}+x\right)$

(c) $\operatorname{sen}\left(\frac{3\pi}{2}-x\right)$

(d) $\dfrac{\operatorname{sen}(2\pi-x)\cdot\cos(\pi-x)}{\operatorname{tg}\left(\frac{\pi}{2}+x\right)\cdot\operatorname{cotg}\left(\frac{3\pi}{2}-x\right)}$

(2) Prove que $(1+\operatorname{cotg}^2 x)(1-\cos^2 x)=1$, para todo x real, $x\neq\pi$.

(3) Demonstre as identidades seguintes:

(a) $\dfrac{\operatorname{sen} x}{\operatorname{cossec} x}+\dfrac{\cos x}{\sec x}=1$

(b) $\operatorname{tg}x+\operatorname{cotg}x=\sec x\cdot\operatorname{cossec}x$

(c) $\dfrac{\operatorname{cotg}^2 x}{1+\operatorname{cotg}^2 x}=\cos^2 x$

Gabarito

(1) (a) $\cos(2x)=\cos^2 x-\operatorname{sen}^2 x$

(b) $\operatorname{sen}\left(\frac{\pi}{2}+x\right)=\cos x$

(c) $\operatorname{sen}\left(\frac{3\pi}{2}-x\right)=-\cos x$

(d) $\dfrac{\operatorname{sen}(2\pi-x)\cdot\cos(\pi-x)}{\operatorname{tg}\left(\frac{\pi}{2}+x\right)\cdot\operatorname{cotg}\left(\frac{3\pi}{2}-x\right)}=-\operatorname{cotg}x\cdot\cos^2 x$