5/11/2018

192 $\tan^2 x - (1+\sqrt{3})\tan x + \sqrt{3} = 0$

C.E.

$x \neq \frac{\pi}{2} + k\pi$

$$\tan x = \frac{1+\sqrt{3} \pm \sqrt{(1+\sqrt{3})^2 - 4\sqrt{3}}}{2} =$$

$$\boxed{\sqrt{a^2} = |a|}$$

$$= \frac{1+\sqrt{3} \pm \sqrt{1+3+2\sqrt{3}-4\sqrt{3}}}{2} =$$

$$= \frac{1+\sqrt{3} \pm \sqrt{1+3-2\sqrt{3}}}{2} = \frac{1+\sqrt{3} \pm \sqrt{(1-\sqrt{3})^2}}{2}$$

$$= \frac{1+\sqrt{3} \pm (1-\sqrt{3})}{2} =$$

$$\frac{\cancel{1}+\sqrt{3}-\cancel{1}+\sqrt{3}}{2} = \sqrt{3}$$

$$\frac{1+\cancel{\sqrt{3}}+1-\cancel{\sqrt{3}}}{2} = 1$$

$\tan x = \sqrt{3}$ v $\tan x = 1$

$$\boxed{x = \frac{\pi}{3} + k\pi \quad \text{v} \quad x = \frac{\pi}{4} + k\pi}$$

ALTERNATIVA

$$\tan^2 x - (1+\sqrt{3})\tan x + \sqrt{3} = 0$$

$$\tan^2 x - \tan x - \sqrt{3}\tan x + \sqrt{3} = 0$$

$$\tan x(\tan x - 1) - \sqrt{3}(\tan x - 1) = 0$$

$$(\tan x - 1)(\tan x - \sqrt{3}) = 0$$

$\downarrow$ legge di annullamento del prodotto

$$\tan x - 1 = 0 \quad \vee \quad \tan x - \sqrt{3} = 0$$

......

197 $\frac{4\cos x - 7}{2\cos^2 x - \cos x} - \frac{5 - 6\cos x}{\cos x} = 7$

$\cos x(2\cos x - 1)$

C.E.

$$\begin{cases} \cos x \neq 0 \\ \cos x \neq \frac{1}{2} \end{cases} \Rightarrow \begin{cases} x \neq \frac{\pi}{2} + k\pi \\ x \neq \pm\frac{\pi}{3} + 2k\pi \end{cases}$$

$$\frac{4\cos x - 7 - (2\cos x - 1)(5 - 6\cos x)}{\cancel{\cos x(2\cos x - 1)}} = \frac{7(2\cos^2 x - \cos x)}{\cancel{\cos x(2\cos x - 1)}}$$

$$4\cos x - 7 - 10\cos x + 12\cos^2 x + 5 - 6\cos x = 14\cos^2 x - 7\cos x$$

$$+2\cos^2 x + 5\cos x + 2 = 0$$

$$\cos x = \frac{-5 \pm \sqrt{25 - 16}}{4} = \begin{cases} -2 \quad \text{N.A.} \\ -\frac{1}{2} \Rightarrow \boxed{x = \pm\frac{2}{3}\pi + 2k\pi} \end{cases}$$

170 $\sin x \cos x + \sin x = 0$ $[k\pi]$

$\sin x (\cos x + 1) = 0$

$\sin x = 0 \quad \vee \quad \cos x = -1$

$x = k\pi \quad \vee \quad x = \pi + 2k\pi$

SOTTOINSIEME

$\Downarrow$

$\boxed{x = k\pi}$

Se $A \subseteq B$, allora $A \cup B = B$