Question #9992

Solve on the interval [0, 2pi). 1.2sin^2(x)+cos(x)=1. Please show your work/

Solution

$1,2\sin^2 x+\cos x=1;$

$1,2(1-\cos^2 x)+\cos x-1=0;$

$1,2-1,2\cos^2 x+\cos x-1=0;$

$1,2\cos^2 x-\cos x-0,2=0;$

$\cos x=t;$

$t\in[-1;1]$

$1,2t^2-t-0,2=0;$

$\sqrt{D}=1,4;$

$t_1=1;t_2=-\frac{1}{6};$

$$\left[\begin{array}{l}\cos x=1\\ \cos x=-\frac{1}{6}\end{array}\right.$$

$x_1=0;$

$x_2=\arccos(-\frac{1}{6});$

$x_3=-\arccos(-\frac{1}{6}).$

Answer: $x_1=0;$

$x_2=\arccos(-\frac{1}{6});$

$x_3=-\arccos(-\frac{1}{6}).$