

**Soluție**

1.  $(2+i)(3-2i)=8-i, (1-2i)(2-i)=-5i \Rightarrow 8-6i$

2.  $f(x)=3x-[3x],$

$$f\left(x+\frac{1}{3}\right)=\left\{3\left(x+\frac{1}{3}\right)\right\}=\{3x+1\}=3x+1-[3x+1]=3x+1-[3x]-1=3x-[3x]=\{3x\}=f(x), \forall x \in \mathbb{R} \Rightarrow$$
$$\Rightarrow \frac{1}{3} \text{ este o perioadă a funcției } f.$$

3.  $x=\pi$  verifică ecuația.  $\operatorname{tg} \frac{x}{2}=t \Rightarrow \sin x=\frac{2t}{1+t^2}, \cos x=\frac{1-t^2}{1+t^2}, t=\frac{1}{\sqrt{3}} \Rightarrow x \in \left\{\frac{\pi}{3}, \pi\right\}.$

4.  $\frac{C_{20}^{10}}{C_{20}^9}=\frac{20!}{10!10!} \cdot \frac{9!11!}{20!}=\frac{11}{10}.$

5.  $m+4=2+2, n+5=3+2 \Rightarrow (m, n)=(0; 0).$

6.  $\frac{\sin x}{\cos x}=4 \Rightarrow \frac{1-\cos^2 x}{\cos^2 x}=16 \Rightarrow \cos^2 x=\frac{1}{17}.$