Barem de corectare şi notare

S 1	S2	S3	S4	S5	S6
c	b	e	d	d	b

7)Scrie axioma de asociativitate :$(x \circ y) \circ z = x \circ (y \circ z)$,

a) $(x \circ y) \circ z$=t∘z=$4(t+1)(z+1)-1$=$4[(x \circ y)+1](z+1)$=$16(x+1)(y+1)(z+1)$-1

x∘ $(y \circ z) = x \circ u = 4(x+1)(u+1)-1 = 4(x+1)[(y \circ z)+1]-1$=
=$16(x+1)(y+1)(z+1)$-1 (4p)
Axioma de comutativitate (1p)
Axioma elementului neutru : $x \circ e = e \circ x = x$

$x \circ e$=x⇔ $4(x+1)(e+1)-1$=x⇔ $4(x+1)(e+1)$=x+1⇔ $4(x+1)(e+1)$-$(x+1) = 0$

⇔ $(x+1)(4e+3) = 0 \Rightarrow e = -\frac{3}{4}$ (3p)
b) Axioma pentru elemente simetrizabile (1p)
$x \circ x'$=e⟹ $4(x+1)(x'+1)-1 = -\frac{3}{4} \Longrightarrow 4(x+1)(x'+1) = -\frac{1}{4} \Longrightarrow x'+1 = \frac{1}{16(x+1)} \Longrightarrow$
⟹ $x' = \frac{1}{16(x+1)} - 1 \Longrightarrow x' = \frac{-16x-15}{16x+16}$, (3p)

x'=x⟹ $\frac{-16x-15}{16x+16}$=x⟹ $16x^2+32x+15=0; \triangle = 64, x_1 = -\frac{-5}{4}; x_2 = -\frac{3}{4}$ (3p)

8) $a) f'(x) = e^x(cos^2x+2016)+e^x(-2cosxsinx) = e^x(cos^2x+2016-sin2x)$
$f(x)$-$f'(x)$=$e^x(cos^2x+2016)+1$-$e^x(cos^2x+2016-sin2x)$=$e^x sin2x$+1 (7p)
a) b) $\int \frac{sin2x+e^{-x}}{e^{-x}+cos^2x+2016}\,dx = \int \frac{e^x sin2x+1}{1+e^x cos^2x+2016e^x} = \int \frac{f(x)-f'(x)}{f(x)}dx = \int \left(1-\frac{f'(x)}{f(x)}\right)dx = x - ln|f(x)|$=

=x-ln$|e^x(cos^2x+2016)+1|$+C (8p)