15.28 1)

α) $f(x)=x^4+\eta\mu x \Rightarrow f'(x)=4x^3+\sigma\upsilon\nu x \Rightarrow f''(x)=12x^2-\eta\mu x$

β) $f(x)=x^3\ln x \Rightarrow f'(x)=3x^2\ln x+x^{\not 3^2}\frac{1}{\not x} \Rightarrow f'(x)=3x^2\ln x+x^2 \Rightarrow$

$\Rightarrow f''(x)=6x\ln x+3x^{\not 2}\frac{1}{\not x}+2x \Rightarrow f''(x)=6x\ln x+5x$

γ) $f(x)=\sqrt{x^2+1} \Rightarrow f'(x)=\frac{1}{\not 2\sqrt{x^2+1}}\cdot \not 2x \Rightarrow f'(x)=\frac{x}{\sqrt{x^2+1}} \Rightarrow$

$\Rightarrow f''(x)=\frac{x}{\sqrt{x^2+1}}=\frac{(x)'\sqrt{x^2+1}-x\left(\sqrt{x^2+1}\right)'}{\sqrt{x^2+1}^2} \Rightarrow$

$\Rightarrow f''(x)=\frac{\sqrt{x^2+1}-x\frac{\not 2x}{\not 2\sqrt{x^2+1}}}{\sqrt{x^2+1}^2} \Rightarrow f''(x)=\frac{\sqrt{x^2+1}-\frac{x^2}{\sqrt{x^2+1}}}{\sqrt{x^2+1}^2} \Rightarrow$

$\Rightarrow f''(x)=\frac{\frac{\sqrt{x^2+1}^2-x^2}{\sqrt{x^2+1}}}{\sqrt{x^2+1}^2} \Rightarrow f''(x)=\frac{\not x^2+1-\not x^2}{\sqrt{x^2+1}^3} \Rightarrow f''(x)=\frac{1}{\sqrt{x^2+1}^3}$

15.28 2)

$f'(x)=4x^3+6x^2-6x+4 \Rightarrow f''(x)=12x^2+12x-6$

15.28 3)

$f'(x)=\frac{1}{x}+3x^2 \Rightarrow f''(x)=-\frac{1}{x^2}+6x$

15.28 4)

$f'(x)=2x\sigma\upsilon\nu x-x^2\eta\mu x \Rightarrow f''(x)=2\sigma\upsilon\nu x-2x\eta\mu x-2x\eta\mu x-x^2\sigma\upsilon\nu x=$

$=2\sigma\upsilon\nu x-4x\eta\mu x-x^2\sigma\upsilon\nu x$

15.28 5)

$f'(x)=\frac{e^x\sigma\upsilon\nu x-e^x\eta\mu x}{\left(e^x\right)^2}=\frac{\not e^x(\sigma\upsilon\nu x-\eta\mu x)}{\left(e^x\right)^{\not 2}}=\frac{\sigma\upsilon\nu x-\eta\mu x}{e^x} \Rightarrow$

$\Rightarrow f''(x)=\frac{(-\eta\mu x-\sigma\upsilon\nu x)e^x-(\sigma\upsilon\nu x-\eta\mu x)e^x}{\left(e^x\right)^2}=$

$=\frac{\not e^x\left(-\not{\eta\mu x}-\sigma\upsilon\nu x-\sigma\upsilon\nu x+\not{\eta\mu x}\right)}{\left(e^x\right)^{\not 2}}=\frac{-2\sigma\upsilon\nu x}{e^x}$