

15.25 1)

$$\begin{aligned} \alpha) \left[\sqrt{\varepsilon\varphi(2x^4 - x)} \right]' &= \frac{1}{2\sqrt{\varepsilon\varphi(2x^4 - x)}} \left[\varepsilon\varphi(2x^4 - x) \right]' = \\ &= \frac{1}{2\sqrt{\varepsilon\varphi(2x^4 - x)}} \frac{1}{\sigma\upsilon\nu^2(2x^4 - x)} (2x^4 - x)' = \frac{1}{2\sqrt{\varepsilon\varphi(2x^4 - x)}} \frac{8x^3 - 1}{\sigma\upsilon\nu^2(2x^4 - x)} \\ \beta) \left[\sigma\upsilon\nu^5(\eta\mu x) \right]' &= 5\sigma\upsilon\nu^4(\eta\mu x) \cdot \left[\sigma\upsilon\nu(\eta\mu x) \right]' = \\ &= 5\sigma\upsilon\nu^4(\eta\mu x) \cdot \left[-\eta\mu(\eta\mu x) \right] \cdot (\eta\mu x)' = -5\sigma\upsilon\nu^4(\eta\mu x) \cdot \eta\mu(\eta\mu x) \cdot (\sigma\upsilon\nu x) \end{aligned}$$

15.25 2)

$$\begin{aligned} \left[\sqrt{\eta\mu(x^2 + 3x)} \right]' &= \frac{1}{2\sqrt{\eta\mu(x^2 + 3x)}} \left[\eta\mu(x^2 + 3x) \right]' = \\ &= \frac{1}{2\sqrt{\eta\mu(x^2 + 3x)}} \sigma\upsilon\nu(x^2 + 3x) \cdot (x^2 + 3x)' = \frac{1}{2\sqrt{\eta\mu(x^2 + 3x)}} \sigma\upsilon\nu(x^2 + 3x) \cdot (2x + 3) \end{aligned}$$

15.25 3)

$$\begin{aligned} \left[\sqrt{\sigma\upsilon\nu(\ln x)} \right]' &= \frac{1}{2\sqrt{\sigma\upsilon\nu(\ln x)}} \left[\sigma\upsilon\nu(\ln x) \right]' = \frac{1}{2\sqrt{\sigma\upsilon\nu(\ln x)}} \left[-\eta\mu(\ln x) \right] \cdot (\ln x)' = \\ &= \frac{-\eta\mu(\ln x)}{2x\sqrt{\sigma\upsilon\nu(\ln x)}} \end{aligned}$$

15.25 4)

$$\begin{aligned} \left[\sqrt{\ln(\sigma\varphi x)} \right]' &= \frac{1}{2\sqrt{\ln(\sigma\varphi x)}} \left[\ln(\sigma\varphi x) \right]' = \frac{1}{2\sqrt{\ln(\sigma\varphi x)}} \frac{1}{\sigma\varphi x} (\sigma\varphi x)' = \\ &= \frac{1}{2\sqrt{\ln(\sigma\varphi x)}} \frac{1}{\sigma\varphi x} \frac{-1}{\eta\mu^2 x} \end{aligned}$$

15.25 5)

$$\begin{aligned} \left[\sigma\upsilon\nu(\ln(\varepsilon\varphi x)) \right]' &= -\eta\mu(\ln(\varepsilon\varphi x)) \cdot \left[\ln(\varepsilon\varphi x) \right]' = -\eta\mu(\ln(\varepsilon\varphi x)) \cdot \frac{1}{\varepsilon\varphi x} (\varepsilon\varphi x)' = \\ &= -\eta\mu(\ln(\varepsilon\varphi x)) \cdot \frac{1}{\varepsilon\varphi x} \frac{1}{\sigma\upsilon\nu^2 x} \end{aligned}$$

15.25 6)

$$\begin{aligned} \left[\sigma\varphi(\ln(\eta\mu x)) \right]' &= -\frac{1}{\eta\mu^2(\ln(\eta\mu x))} (\ln(\eta\mu x))' = -\frac{1}{\eta\mu^2(\ln(\eta\mu x))} \frac{1}{\eta\mu x} (\eta\mu x)' = \\ &= -\frac{1}{\eta\mu^2(\ln(\eta\mu x))} \frac{1}{\eta\mu x} \sigma\upsilon\nu x \end{aligned}$$

15.25 7)

$$\begin{aligned} \left[\varepsilon\varphi(\ln \sqrt{x}) \right]' &= \frac{1}{\sigma\upsilon\nu^2(\ln \sqrt{x})} \cdot (\ln \sqrt{x})' = \frac{1}{\sigma\upsilon\nu^2(\ln \sqrt{x})} \cdot \frac{1}{\sqrt{x}} (\sqrt{x})' = \\ &= \frac{1}{\sigma\upsilon\nu^2(\ln \sqrt{x})} \cdot \frac{1}{\sqrt{x}} \frac{1}{2\sqrt{x}} = \frac{1}{2x\sigma\upsilon\nu^2(\ln \sqrt{x})} \end{aligned}$$

15.25 8)

$$\begin{aligned} \left[\sigma\upsilon\nu\left(\sqrt{e^x+x}\right) \right]' &= -\eta\mu\left(\sqrt{e^x+x}\right) \cdot \left(\sqrt{e^x+x}\right)' = \\ &= -\eta\mu\left(\sqrt{e^x+x}\right) \cdot \frac{1}{2\sqrt{e^x+x}} (e^x+x)' = -\eta\mu\left(\sqrt{e^x+x}\right) \cdot \frac{1}{2\sqrt{e^x+x}} (e^x+1) \end{aligned}$$

15.25 9)

$$\begin{aligned} \left[\sigma\upsilon\nu\left(\sqrt{3^x+x}\right) \right]' &= -\eta\mu\left(\sqrt{3^x+x}\right) \cdot \left(\sqrt{3^x+x}\right)' = \\ &= -\eta\mu\left(\sqrt{3^x+x}\right) \cdot \frac{1}{2\sqrt{3^x+x}} (3^x+x)' = -\eta\mu\left(\sqrt{3^x+x}\right) \cdot \frac{1}{2\sqrt{3^x+x}} (3^x \ln 3 + 1) \end{aligned}$$

15.25 10)

$$\begin{aligned} \left(\ln \sqrt{5e^x+x^2} \right)' &= \frac{1}{\sqrt{5e^x+x^2}} \cdot \left(\sqrt{5e^x+x^2} \right)' = \frac{1}{\sqrt{5e^x+x^2}} \cdot \frac{1}{2\sqrt{5e^x+x^2}} (5e^x+x^2)' = \\ &= \frac{1}{\sqrt{5e^x+x^2}} \cdot \frac{1}{2\sqrt{5e^x+x^2}} (5e^x+2x) \end{aligned}$$

15.25 11)

$$\begin{aligned} \ln \left[\varepsilon\varphi(5^x+x^4) \right]' &= \frac{1}{\varepsilon\varphi(5^x+x^4)} \left[\varepsilon\varphi(5^x+x^4) \right]' \\ &= \frac{1}{\varepsilon\varphi(5^x+x^4)} \frac{1}{\sigma\upsilon\nu^2(5^x+x^4)} (5^x+x^4)' = \frac{1}{\varepsilon\varphi(5^x+x^4)} \frac{1}{\sigma\upsilon\nu^2(5^x+x^4)} (5^x \ln 5 + 4x^3) = \end{aligned}$$

15.25 12)

$$\begin{aligned} \left[\eta\mu(\sigma\upsilon\nu(\varepsilon\varphi x)) \right]' &= \sigma\upsilon\nu(\sigma\upsilon\nu(\varepsilon\varphi x)) \cdot \left[\sigma\upsilon\nu(\varepsilon\varphi x) \right]' = \\ &= \sigma\upsilon\nu(\sigma\upsilon\nu(\varepsilon\varphi x)) \cdot \left[-\eta\mu(\varepsilon\varphi x) \right] (\varepsilon\varphi x)' = -\sigma\upsilon\nu(\sigma\upsilon\nu(\varepsilon\varphi x)) \cdot \eta\mu(\varepsilon\varphi x) \frac{1}{\sigma\upsilon\nu^2 x} \end{aligned}$$

15.25 13)

$$\begin{aligned} \left[\eta\mu(\eta\mu(\eta\mu x)) \right]' &= \sigma\upsilon\nu(\eta\mu(\eta\mu x)) \cdot \left[\eta\mu(\eta\mu x) \right]' = \\ &= \sigma\upsilon\nu(\eta\mu(\eta\mu x)) \cdot \sigma\upsilon\nu(\eta\mu x) (\eta\mu x)' = \sigma\upsilon\nu(\eta\mu(\eta\mu x)) \cdot \sigma\upsilon\nu(\eta\mu x) \sigma\upsilon\nu x = \end{aligned}$$

15.25 14)

$$\begin{aligned} \left[e^{\eta\mu(\sigma\upsilon\nu x)} \right]' &= e^{\eta\mu(\sigma\upsilon\nu x)} \left[\eta\mu(\sigma\upsilon\nu x) \right]' = e^{\eta\mu(\sigma\upsilon\nu x)} \sigma\upsilon\nu(\sigma\upsilon\nu x) \cdot (\sigma\upsilon\nu x)' = \\ &= e^{\eta\mu(\sigma\upsilon\nu x)} \sigma\upsilon\nu(\sigma\upsilon\nu x) \cdot (-\eta\mu x) = -e^{\eta\mu(\sigma\upsilon\nu x)} \sigma\upsilon\nu(\sigma\upsilon\nu x) \cdot \eta\mu x \end{aligned}$$

15.25 15)

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

15.25 16)

$$\left[4^{\ln(\varepsilon\varphi x)} \right]' = 4^{\ln(\varepsilon\varphi x)} \ln 4 \left[\ln(\varepsilon\varphi x) \right]' = 4^{\ln(\varepsilon\varphi x)} \ln 4 \frac{1}{\varepsilon\varphi x} (\varepsilon\varphi x)' = 4^{\ln(\varepsilon\varphi x)} \ln 4 \frac{1}{\varepsilon\varphi x} \frac{1}{\sigma\upsilon\nu^2 x}$$

15.25 17)

$$\left(7^{3^{\sigma\upsilon\nu x}} \right)' = 7^{3^{\sigma\upsilon\nu x}} \ln 7 \cdot (3^{\sigma\upsilon\nu x})' = 7^{3^{\sigma\upsilon\nu x}} \ln 7 \cdot 3^{\sigma\upsilon\nu x} \ln 3 \cdot (\sigma\upsilon\nu x)' = 7^{3^{\sigma\upsilon\nu x}} \ln 7 \cdot 3^{\sigma\upsilon\nu x} \ln 3 \cdot (-\eta\mu x) =$$

$$= -7^{3^{\sigma\nu x}} \ln 7 \cdot 3^{\sigma\nu x} \ln 3 \cdot \eta\mu x$$

15.25 18)

$$\begin{aligned} [\eta\mu(\sigma\nu 2x)]' &= \sigma\nu(\sigma\nu 2x) \cdot (\sigma\nu 2x)' = \sigma\nu(\sigma\nu 2x) \cdot (-\eta\mu 2x)(2x)' = \\ &= -\sigma\nu(\sigma\nu 2x) \cdot \eta\mu 2x \cdot 2 \end{aligned}$$

15.25 19)

$$(\sqrt{2^{3x}})' = \frac{1}{2\sqrt{2^{3x}}} (2^{3x})' = \frac{1}{2\sqrt{2^{3x}}} 2^{3x} \cdot \ln 2 \cdot (3x)' = \frac{1}{2\sqrt{2^{3x}}} 2^{3x} \cdot \ln 2 \cdot 3$$

15.25 20)

$$(3^{\eta\mu 3x})' = 3^{\eta\mu 3x} \ln 3 \cdot (\eta\mu 3x)' = 3^{\eta\mu 3x} \ln 3 \cdot \sigma\nu 3x \cdot (3x)' = 3^{\eta\mu 3x} \ln 3 \cdot \sigma\nu 3x \cdot 3$$

15.25 21)

$$\begin{aligned} \left[\ln(\sqrt{x^2 + x + 3}) \right]' &= \frac{1}{\sqrt{x^2 + x + 3}} (\sqrt{x^2 + x + 3})' = \\ &= \frac{1}{\sqrt{x^2 + x + 3}} \frac{1}{2\sqrt{x^2 + x + 3}} (x^2 + x + 3)' = \frac{1}{2\sqrt{x^2 + x + 3}^2} (2x + 1) = \frac{2x + 1}{2(x^2 + x + 3)} \end{aligned}$$

15.25 22)

$$\begin{aligned} \left[e^{\eta\mu(x^2 - x + 1)} \right]' &= e^{\eta\mu(x^2 - x + 1)} [\eta\mu(x^2 - x + 1)]' = e^{\eta\mu(x^2 - x + 1)} \sigma\nu(x^2 - x + 1) \cdot (x^2 - x + 1)' = \\ &= e^{\eta\mu(x^2 - x + 1)} \sigma\nu(x^2 - x + 1) \cdot (2x - 1) \end{aligned}$$

15.25 23)

$$\begin{aligned} [\eta\mu(\ln(\sqrt{x} - 1))] &= \sigma\nu(\ln(\sqrt{x} - 1)) [\ln(\sqrt{x} - 1)]' = \\ &= \sigma\nu(\ln(\sqrt{x} - 1)) \frac{1}{\sqrt{x} - 1} (\sqrt{x} - 1)' = \sigma\nu(\ln(\sqrt{x} - 1)) \frac{1}{\sqrt{x} - 1} \frac{1}{2\sqrt{x}} \end{aligned}$$

15.25 24)

$$\begin{aligned} (\sqrt{2\eta\mu 4x})' &= \frac{1}{2\sqrt{2\eta\mu 4x}} \cdot (2\eta\mu 4x)' = \frac{1}{\cancel{2}\sqrt{2\eta\mu 4x}} \cdot (\cancel{2}\sigma\nu 4x) \cdot (4x)' = \\ &= \frac{1}{\sqrt{2\eta\mu 4x}} \cdot \sigma\nu 4x \cdot 4 \end{aligned}$$

15.25 25)

$$\begin{aligned} \left(\frac{1}{\sigma\nu^2(\ln x)} \right)' &= -\frac{1}{\sigma\nu^4(\ln x)} [\sigma\nu^2(\ln x)]' = \\ &= -\frac{1}{\sigma\nu^4(\ln x)} 2\sigma\nu(\ln x) [\sigma\nu(\ln x)]' = -\frac{2\sigma\nu(\ln x)}{\sigma\nu^4(\ln x)} [-\eta\mu(\ln x)] \cdot (\ln x)' = \\ &= \frac{2\sigma\nu(\ln x) \eta\mu(\ln x)}{x\sigma\nu^4(\ln x)} \end{aligned}$$