Ans) $ds^2 = \eta_{AB}\, dX^A dX^B$

$= (dX^0)^2 - \sum_{i=1}^{D-1} (dX^i)^2 - (dX^D)^2$

$\mu X^0 = \sinh(\mu\tau_+) + \frac{(\mu \vec{x}_+)^2}{2} e^{\mu\tau_+}$

$\Rightarrow \mu\, dX^0 = \mu \cosh\mu\tau_+\, d\tau_+ + \mu(\mu \vec{x}_+)\, d\vec{x}_+\, e^{\mu\tau_+} + \frac{(\mu\vec{x}_+)^2}{2}\mu e^{\mu\tau_+} d\tau_+$

$\Rightarrow dX^0 = \left[\cosh(\mu\tau_+) + \frac{(\mu\vec{x}_+)^2}{2} e^{\mu\tau_+}\right] d\tau_+ + e^{\mu\tau_+}\mu\vec{x}_+\, d\vec{x}_+$

$\Rightarrow (dX^0)^2 = \left[\cosh^2\mu\tau_+ + \frac{(\mu\vec{x}_+)^4}{4} e^{2\mu\tau_+} + (\mu\vec{x}_+)^2 \cosh\mu\tau_+ \times e^{\mu\tau_+}\right] d\tau_+^2$

$+ e^{2\mu\tau_+}(\vec{x}_+)^2 (d\vec{x}_+)^2 + 2\left[\cosh\mu\tau_+ + \frac{(\mu\vec{x}_+)^2}{2} e^{\mu\tau_+}\right] e^{\mu\tau_+}\vec{x}_+ \times d\tau_+ d\vec{x}_+$

$\mu X^i = \mu x_+^i e^{\mu\tau_+}$

$\Rightarrow \mu\, dX^i = \mu e^{\mu\tau_+} dx_+^i + \mu^2 x_+^i e^{\mu\tau_+} d\tau_+$

$\Rightarrow (dX^i)^2 = e^{2\mu\tau_+} dx_+^{i2} + \mu^2 x_+^{i2} e^{2\mu\tau_+} d\tau_+^2 + 2\mu e^{2\mu\tau_+} x_+^i dx_+^i d\tau_+$

$= e^{2\mu\tau_+}\left[dx_+^{i2} + \mu^2 x_+^{i2} d\tau_+^2 + 2x_+^i dx_+^i d\tau_+\right]$

$\Rightarrow \sum_{i=1}^{D-1} (dX^i)^2 = e^{2\mu\tau_+}\left[d\vec{x}_+^2 + \mu^2 \vec{x}^2 d\tau_+^2 + 2\vec{x}\, d\vec{x}\, d\tau_+\right]$

$\mu X^D = -\cosh(\mu\tau_+) + \frac{(\mu\vec{x}_+)^2}{2} e^{\mu\tau_+}$

$\Rightarrow dX^D = -\sinh\mu\tau_+\, d\tau_+ + \mu\vec{x}_+\, d\vec{x}_+\, e^{\mu\tau_+} + \frac{(\mu\vec{x}_+)^2}{2}\mu e^{\mu\tau_+} d\tau_+$

$\Rightarrow dX^D = \left[-\sinh\mu\tau_+ + \frac{(\mu\vec{x}_+)^2}{2} e^{\mu\tau_+}\right] d\tau_+ + \vec{x}_+\, d\vec{x}_+\, e^{\mu\tau_+}$

$\Rightarrow d$

$\Rightarrow (dX^D)^2 = \left(\sinh^2\mu\tau_+ + \frac{(\mu\vec{x}_+)^4}{4} e^{2\mu\tau_+} - 2\sinh\mu\tau_+ \ldots\right] d\tau_+$

$+ (\vec{x}_+)^2 d\vec{x}_+^2 e^{2\mu\tau_+} + 2(\quad)(\quad)$

$\Rightarrow ds^2 = \overbrace{(\cosh^2\mu\tau_+ - \sinh^2\mu\tau_+)}^{=1} d\tau_+^2$ + rest terms cancel

$\Rightarrow ds^2 = d\tau_+^2 - e^{2\mu\tau} d\vec{x}_+^2$