LT inv

$$x' = \gamma(x - vt) \qquad x = \gamma(x' + vt')$$

$$t' = \gamma\left(t - \frac{vx}{c^2}\right) \qquad t = \gamma\left(t' + \frac{v}{c^2}x'\right)$$

$$t' = \gamma t - \frac{\gamma v x}{c^2} \qquad x' = \gamma x - \gamma v t$$

$$-\gamma t = -t' - \frac{\gamma v x}{c^2} \qquad \gamma x = x' + \gamma v t$$

$$\gamma t = t' + \frac{\gamma v x}{c^2} \qquad \gamma x = x' + \gamma v\left(\frac{t'}{\gamma} + \frac{vx}{c^2}\right)$$

$$\gamma x = x' + vt' + \frac{\gamma v^2 x}{c^2}$$

$$t = \frac{t' + \frac{\gamma v x}{c^2}}{\gamma} \qquad x = \frac{x'}{\gamma} + \frac{vt'}{\gamma} + \frac{v^2 x}{c^2}$$

$$\boxed{t = \frac{t'}{\gamma} + \frac{vx}{c^2}}$$

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