$$f_1 - (st^d f_1 - s^{d+1} f_2)^d = x_1 + \left(st^d x_1 - s^{d+1} x_2 \right)^d - \left(st^d (x_1 + (st^d x_1 - s^{d+1} x_2)^d) - s^{d+1} (x_2 + (t^{d+1} x_1 - s^d t x_2)^d) \right)^d \equiv x_1 + \left(st^d x_1 - s^{d+1} x_2 \right)^d - \left(st^d (x_1 + (st^d x_1 - s^{d+1} x_2)^d) - s^{d+1} (x_2 + (t^{d+1} x_1 - s^d t x_2)^d) \right)^d \equiv x_1 + \left(st^d x_1 - s^{d+1} x_2 \right)^d - \left(st^d (x_1 + (st^d x_1 - s^{d+1} x_2)^d) - s^{d+1} (x_2 + (t^{d+1} x_1 - s^d t x_2)^d) \right)^d = x_1 + \left(st^d x_1 - s^{d+1} x_2 \right)^d - \left(st^d (x_1 + (st^d x_1 - s^{d+1} x_2)^d) - s^{d+1} (x_2 + (t^{d+1} x_1 - s^d t x_2)^d) \right)^d = x_1 + \left(st^d x_1 - s^{d+1} x_2 \right)^d - \left(st^d (x_1 + (st^d x_1 - s^{d+1} x_2)^d) - s^{d+1} (x_2 + (t^{d+1} x_1 - s^d t x_2)^d) \right)^d = x_1 + \left(st^d x_1 - s^{d+1} x_2 \right)^d - \left(st^d (x_1 + (st^d x_1 - s^{d+1} x_2)^d) - s^{d+1} (x_2 + (t^{d+1} x_1 - s^d t x_2)^d) \right)^d = x_1 + \left(st^d x_1 - s^{d+1} x_2 \right)^d - \left(st^d (x_1 + (st^d x_1 - s^d t x_2)^d) - s^{d+1} (x_2 + (t^{d+1} x_1 - s^d t x_2)^d) \right)^d = x_1 + \left(st^d x_1 - s^d x_1 - s^d x_1 - s^d x_1 \right)^d + s^d x_2 + s^d x_1 + s^d x_2 + s^d x_2 + s^d x_2 + s^d x_2 + s^d x_3 + s^d x_2 + s^d x_3 + s$$