Obs: $\dot{x} + tx = t^3 x^3$

Gang med x^{-3}

$$\dot{x}x^{-3} + tx^{-2} = t^3$$

Substitution: $z = x^{1-r} = x^{-2}$

$$\Rightarrow \quad \dot{z} = -2x^{-3}\dot{x}$$

$$\Rightarrow \quad -\frac{1}{2}\dot{z} + tz = t^3 \qquad / \cdot (-2)$$

$$\dot{z} - 2tz = -2t^3$$

$$a(t) = -2t$$
$$A(t) = -t^2 \quad \Rightarrow \quad e^{A(t)} = e^{-t^2}$$

$$\Rightarrow z(t) = Ce^{t^2} + e^{t^2}\int -2s^3 e^{-s^2} ds$$

$$-\int 2t^3 e^{-t^2} dt = -\int 2t^3 e^u \frac{1}{-2t} du$$

Substitutér: $u = -t^2 \Rightarrow du = -2t\,dt$

$$= -\int u e^u du = -ue^u + \int e^u du$$
$$\text{Fg} \qquad\qquad \text{FG} - \text{fG}$$

$$= -ue^u + e^u$$
$$= t^2 e^{-t^2} + e^{-t^2}$$

$$\Rightarrow z(t) = Ce^{t^2} + t^2 + 1 = x(t)^{-2}$$

$$\Rightarrow x(t) = \frac{1}{\pm\sqrt{Ce^{t^2} + t^2 + 1}}$$

□