$$dX_t = 3X_t^{2/3}\,dW_t + 3X_t^{1/3}\,dt$$

Idea: choose f so that

$$f'(X_t)\,3X_t^{2/3}\,dW_t = dW_t .$$

This f is $f(X_t) = X_t^{1/3}$,

then $f'(X_t) = \frac{1}{3}X_t^{-2/3}$, $f''(X_t) = -\frac{2}{9}X_t^{-5/3}$

Then: apply Itô's formula to this f:

$$d\left(X_t^{1/3}\right) = df(X_t)$$

$$= f'(X_t)\,3X_t^{2/3}\,dW_t + f'(X_t)\,3X_t^{1/3}\,dt$$

$$+ \frac{1}{2} f''(X_t)\left(3X_t^{2/3}\right)^2 dt$$

$$= \left(\frac{1}{3} X_t^{-2/3}\right)\left(3X_t^{2/3}\right) dW_t + \left(\frac{1}{3} X_t^{-2/3}\right)\left(3X_t^{1/3}\right) dt$$

$$+ \left(\frac{1}{2}\right)\left(-\frac{2}{9} X_t^{-5/3}\right)\left(9X_t^{4/3}\right) dt$$

$$= dW_t + X_t^{-1/3} dt + X_t^{-1/3} dt$$

$$= dW_t$$

We've shown $dX_t^{1/3} = dW_t$, so

$$(*) \quad X_t^{1/3} = W_t$$

This suggests that $X_t = W_t^3$.

Now: to verify this, apply Itô's formula to $g(W_t) = W_t^3$.