(2)

⇒ A function $f(x,y)$ is called homogeneous if $f(tx,ty) = t^{\alpha} f(x,y)$ of degree α.

Now here given

$f(x,y) = x + y^2$

$f(tx,ty) = tx + t^2y^2 = t(x + ty^2)$

$\neq t^{\alpha} f(x,y)$

So, not homogeneous

hence, not home degree.

option (B), (D) are corrt

(3)

$v'(t) = 4v^{3/4}(t) \qquad v(0) = 0$

$\int \frac{dv}{v^{3/4}} = \int 4\,dt$

$4(v)^{\frac{1}{4}} = 4t + c$

$\Rightarrow u = (t + c)^4$ — (A)

$v(0) = 0$ gives

$\boxed{v(t) = t^4}$

⇒ $v(t) = 0$ is also trivial solution.

⇒ from (A), by shifting curve $v(t) = t^4$ on x-axis

$$v(t) = \begin{cases} 0 & 0 < t < \pi \\ (t-\pi)^4 & t \geq \pi \end{cases}$$

put $\pi = 1$ and 10 then C, D are correct

So, option A, B, C, D are correct