(7) We want to find the value(s) of t so that $\vec{r}'(t)$ is a scalar multiple of $\langle 2, 8, 24 \rangle$.

Now $\vec{r}'(t) = \langle 1, 2t, 3t^2 \rangle$

If $\langle 1, 2t, 3t^2 \rangle = k \langle 2, 8, 24 \rangle$ then $k = \frac{1}{2}$,

so $2t = \frac{1}{2}(8) = 4$ and $3t^2 = \frac{1}{2}(24) = 12$.

So $t = 2$.

The point on the curve $\vec{r}(t) = \langle t, t^2, t^3 \rangle$

at $t = 2$ is $(2, 4, 8)$.