6. [5 points] The function $P(t)$ is given by the equation

$$P(t) = \begin{cases} t + 4 & t < 2 \\ t^2 - 3t + 8 & 2 \le t \le 3 \\ \dfrac{1}{9}(t^3 + 44) & t > 3 \end{cases}$$

For which values of t is $P(t)$ *differentiable*? Show all your work to justify your answer.

Answer:

The function $P(t)$ is differentiable for the following values of t: _____