

Logistische Differentialgleichung

$$P'(t) = \gamma P(t) - \tau P^2(t)$$

$$\text{In}[1]:= P[t_]:= \frac{\gamma P0}{\tau P0 + (\gamma - \tau P0) \text{Exp}[-\gamma t]}$$

$$\text{In}[2]:= \gamma = 3; \tau = 1;$$

$$\text{In}[4]:= P1[t_] = P[t] /. P0 \rightarrow 4$$

$$\text{Out}[4]= \frac{12}{4 - e^{-3t}}$$

$$\text{In}[5]:= P2[t_] = P[t] /. P0 \rightarrow 2$$

$$\text{Out}[5]= \frac{6}{2 + e^{-3t}}$$

$$\text{In}[6]:= P3[t_] = P[t] /. P0 \rightarrow .25$$

$$\text{Out}[6]= \frac{0.75}{0.25 + 2.75 e^{-3t}}$$

$$\text{In}[7]:= \text{Plot}\left[\left\{\frac{\gamma}{\tau}, \frac{\gamma}{2\tau}, P1[t], P2[t], P3[t]\right\}, \{t, 0, 3\}, \text{PlotRange} \rightarrow \{0, 4\}\right]$$

