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$$\boxed{P(r) = 100 = \frac{100}{(1+r)^n} + \sum_{i=1}^{n} \frac{100 \cdot c}{(1+r)^i}}$$

$$100 - \frac{100}{(1+r)^n} = \sum_{i=1}^{n} \frac{100 \cdot c}{(1+r)^i}$$

$$S_n = u_1 \cdot \frac{1-q^n}{1-q}$$

$$100\left(1 - \frac{1}{(1+r)^n}\right) = \sum_{i=1}^{n} \frac{100 \cdot c}{(1+r)^i} \quad \Big) \, :100$$

$$1 - \frac{1}{(1+r)^n} = c \sum_{i=1}^{n} \frac{1}{(1+r)^i} = \frac{1}{1+r} \cdot \frac{1 - \left(\frac{1}{1+r}\right)^n}{\underbrace{1 - \frac{1}{1+r}}} = \frac{1+r}{1+r} - \frac{1}{1+r} = \frac{1+r-1}{1+r} = \frac{r}{1+r}$$

$$c = \frac{1 - \frac{1}{(1+r)^n}}{\sum_{i=1}^{n} \frac{1}{(1+r)^i}}$$

$$1 - \frac{1}{(1+r)^n} = c \cdot \frac{1}{1+r} \cdot \frac{1 - \left(\frac{1}{1+r}\right)^n}{\frac{r}{1+r}}$$

$$1 - \frac{1}{(1+r)^n} = c\left(\frac{1}{1+r} \cdot \left(1 - \left(\frac{1}{1+r}\right)\right)^n \cdot \frac{1+r}{r}\right)$$

$$1 - \frac{1}{(1+r)^n} = c\left(\left(1 - \left(\frac{1}{1+r}\right)\right)^n \cdot \underbrace{\frac{1}{1+r} \cdot \frac{1+r}{r}}\right)$$

$$1 - \frac{1}{(1+r)^n} = c \cdot \left(\left(1 - \left(\frac{1}{1+r}\right)\right)^n \cdot \frac{1}{r}\right) \quad \Big) \, : 1 - \frac{1}{(1+r)^n}$$

$$\cancel{\frac{1 - \frac{1}{(1+r)^n}}{1 - \frac{1}{(1+r)^n}}} = c \cdot \frac{1}{r} \cdot \cancel{\frac{1 - \frac{1}{(1+r)^n}}{1 - \frac{1}{(1+r)^n}}}$$

$$1 = c \cdot \frac{1}{r}$$

$$\boxed{r = c}$$