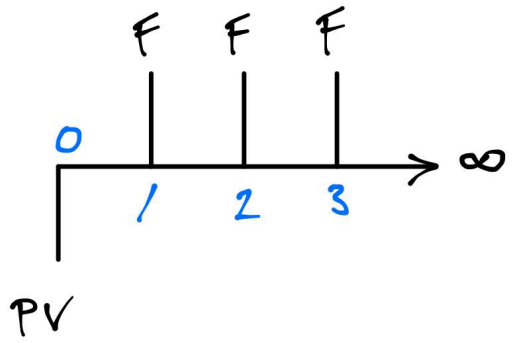
E: PV refresher 2

Formula 3: extension to an infinite stream of identical payments:

Payment of F every year starting at $T = 1$ (one year in the future)



$$PV = \frac{F}{r}$$

Example 5: infinite stream of $1000 payments

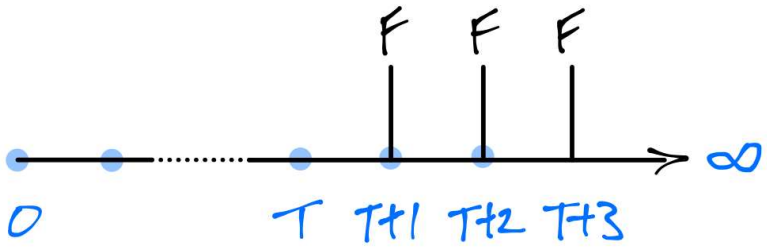
Payment = $1000
r = 5%

PV = $1000/0.05 = $20,000

Intuition:
Deposit $20k in order to withdraw $1,000 at the end of each year

Formula 4: infinite stream with a delayed start:

Payment of F every year starting at $\mathrm{T} + 1$



$$PV = \frac{\frac{F}{r}}{(1+r)^T}$$

⚠ Be sure to note that T is the year **before** the first payment

Example 6: NPV of an R&D policy

Cost at 0:	$1M
Benefit:	$100k/year forever
Starting date:	11
r:	5%

$$PV_B = \frac{\frac{F}{r}}{(1+r)^T} = \frac{\frac{\$100{,}000}{0.05}}{(1.05)^{10}} = \$1.228\text{M}$$

$$PV_C = \$1M$$

$$NPV = PV_B - PV_C$$

NPV = $1.228M - $1M = $228k

Example 7: Exercise on GC