

Evaluating an Interesting Limit

Session 19

$$1) \lim_{n \rightarrow \infty} \left(1 + \frac{1}{n}\right)^{3n} = \left(\lim_{n \rightarrow \infty} \left(1 + \frac{1}{n}\right)^n\right)^3 = e^3$$

$$2) \lim_{n \rightarrow \infty} \left(1 + \frac{2}{n}\right)^{5n} = \lim_{m \rightarrow \infty} \left(1 + \frac{1}{m}\right)^{2m^5} = e^{10}$$

$$3) \lim_{n \rightarrow \infty} \left(1 + \frac{1}{2n}\right)^{5n} = \lim_{m \rightarrow \infty} \left(1 + \frac{1}{m}\right)^{5/2m} = e^{5/2}$$

Evaluating an Interest Using the Limit

Session 19

$$1) \lim_{K \rightarrow \infty} APR = \lim_{K \rightarrow \infty} \left(1 + \frac{0.05}{K}\right)^K - 1 = \lim_{n \rightarrow \infty} \left(1 + \frac{0.1}{n}\right)^{0.05n} - 1 = e^{0.05} - 1$$

$$2) \lim_{K \rightarrow \infty} APR = \lim_{K \rightarrow \infty} \left(1 + \frac{0.1}{K}\right)^K - 1 = e^{0.1} - 1$$