

Exponential Functions in Banking - General

Exponential Functions in Banking - General

► We saw that the amount of **money owed** on a loan after t years, in which we originally borrow **\$10000** with an **annual interest rate** of **6%** compounded **12** times per year is given by:

Exponential Functions in Banking - General

► We saw that the amount of **money owed** on a loan after t years, in which we originally borrow **\$10000** with an **annual interest rate** of **6%** compounded **12** times per year is given by:

$$P(t) = 10000 \cdot \left(1 + \frac{6\%}{12}\right)^{12t}$$

Exponential Functions in Banking - General

► We saw that the amount of **money owed** on a loan after t years, in which we originally borrow **\$10000** with an **annual interest rate** of **6%** compounded **12** times per year is given by:

$$P(t) = 10000 \cdot \left(1 + \frac{6\%}{12}\right)^{12t}$$

Following the same steps, we can find that the amount of **money owed** on a loan after t years, in which we originally borrow **\$ P_0** with an **annual interest rate** of r compounded n times per year is given by:

Exponential Functions in Banking - General

► We saw that the amount of **money owed** on a loan after t years, in which we originally borrow **\$10000** with an **annual interest rate** of **6%** compounded **12** times per year is given by:

$$P(t) = 10000 \cdot \left(1 + \frac{6\%}{12}\right)^{12t}$$

Following the same steps, we can find that the amount of **money owed** on a loan after t years, in which we originally borrow **\$ P_o** with an **annual interest rate** of r compounded n times per year is given by:

$$P(t) = P_o \left(1 + \frac{r}{n}\right)^{nt}$$

Exponential Functions in Banking - General

► We saw that the amount of **money owed** on a loan after t years, in which we originally borrow \$10000 with an **annual interest rate** of 6% compounded 12 times per year is given by:

$$P(t) = 10000 \cdot \left(1 + \frac{6\%}{12}\right)^{12t}$$

Following the same steps, we can find that the amount of **money owed** on a loan after t years, in which we originally borrow \$ P_o with an **annual interest rate** of r compounded n times per year is given by:

$$P(t) = P_o \left(1 + \frac{r}{n}\right)^{nt}$$

Furthermore: We found that if we increase n more and more (to ∞) then we say the interest is *compounded continuously* and:

Exponential Functions in Banking - General

► We saw that the amount of **money owed** on a loan after t years, in which we originally borrow **\$10000** with an **annual interest rate** of **6%** compounded **12** times per year is given by:

$$P(t) = 10000 \cdot \left(1 + \frac{6\%}{12}\right)^{12t}$$

Following the same steps, we can find that the amount of **money owed** on a loan after t years, in which we originally borrow **\$ P_o** with an **annual interest rate** of r compounded n times per year is given by:

$$P(t) = P_o \left(1 + \frac{r}{n}\right)^{nt}$$

Furthermore: We found that if we increase n more and more (to ∞) then we say the interest is *compounded continuously* and:

$$P(t) = P_o e^{rt}$$