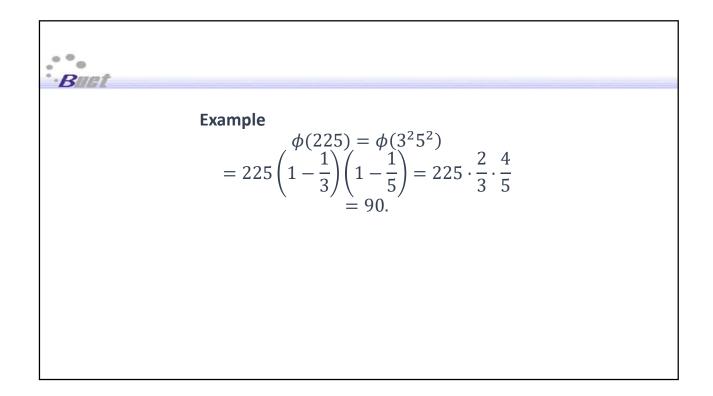
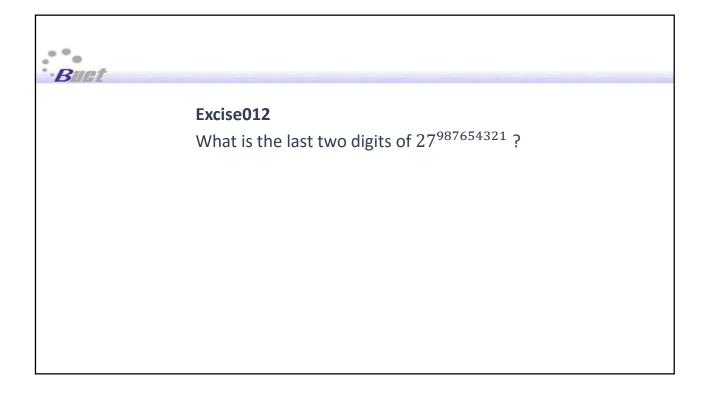
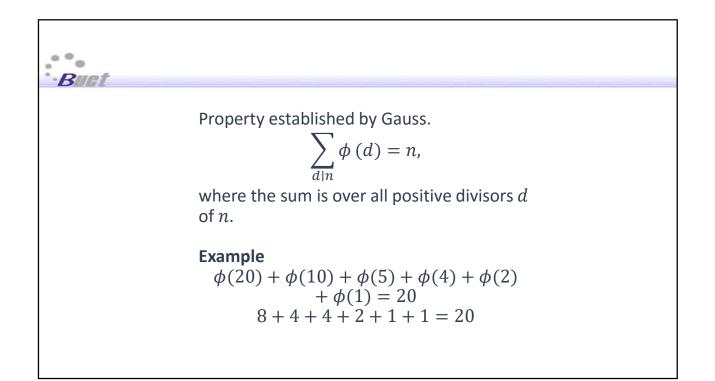


4

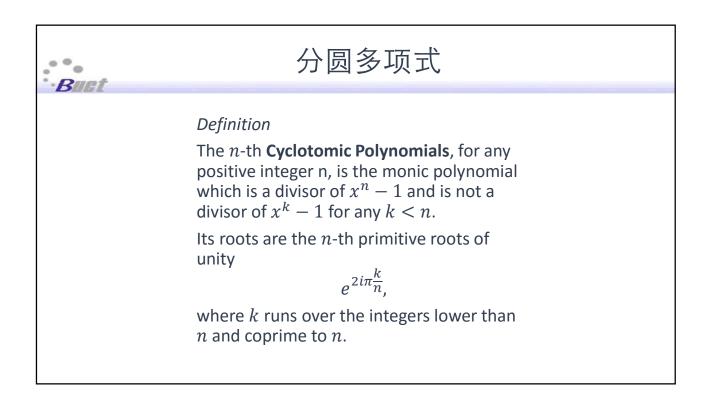


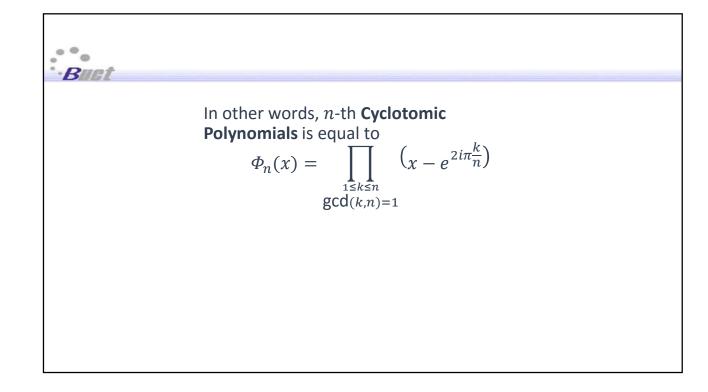


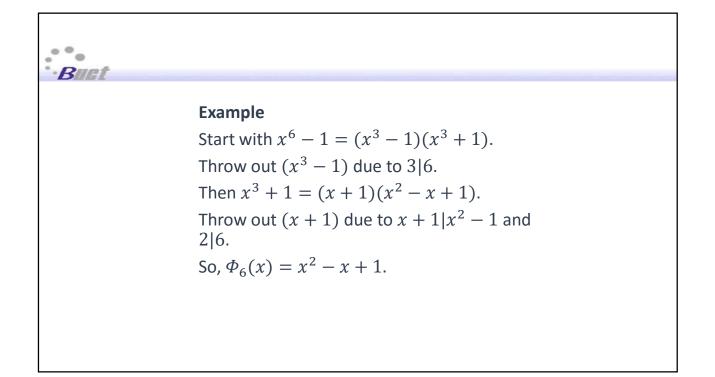


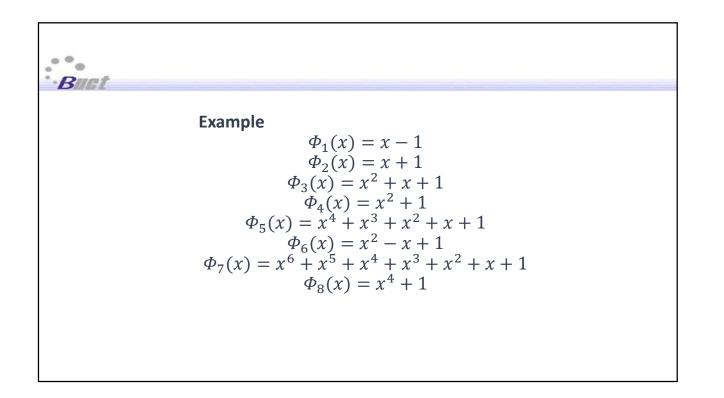
Buct	
	$\frac{1}{20}, \frac{2}{20}, \frac{3}{20}, \frac{4}{20}, \frac{5}{20}, \frac{6}{20}, \frac{7}{20}, \frac{8}{20}, \frac{9}{20}, \frac{10}{20}, \frac{11}{20}, \frac{12}{20}, \frac{13}{20}, \frac{14}{20}, \frac{15}{20}, \frac{16}{20}, \frac{17}{20}, \frac{18}{20}, \frac{19}{20}, \frac{20}{20}, \frac{20}{20}, \frac{11}{20}, \frac{11}{20}, \frac{11}{20}, \frac{12}{20}, \frac{13}{20}, \frac{14}{20}, \frac{15}{20}, \frac{16}{20}, \frac{17}{20}, \frac{18}{20}, \frac{19}{20}, \frac{20}{20}, \frac{20}{20}, \frac{11}{20}, \frac{11}{2$
	Put them into lowest terms:
	$\frac{1}{20}, \frac{1}{10}, \frac{3}{20}, \frac{1}{5}, \frac{1}{4}, \frac{3}{10}, \frac{7}{20}, \frac{2}{5}, \frac{9}{20}, \frac{1}{2}, \\\frac{11}{20}, \frac{3}{5}, \frac{13}{20}, \frac{7}{10}, \frac{3}{4}, \frac{4}{5}, \frac{17}{20}, \frac{9}{10}, \frac{19}{20}, \frac{1}{1}$

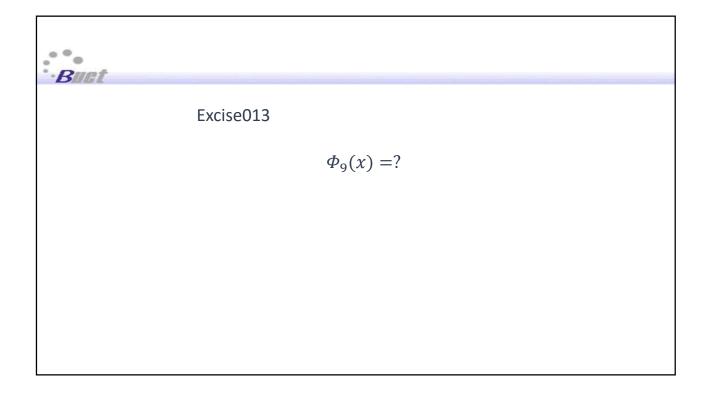
$$\begin{array}{c}
\varphi(20) \\
\rightarrow \left(\frac{1}{20}, \frac{3}{20}, \frac{7}{20}, \frac{9}{20}, \frac{11}{20}, \frac{13}{20}, \frac{17}{20}, \frac{19}{20}\right) \\
\phi(10) \rightarrow \left(\frac{1}{10}, \frac{3}{10}, \frac{7}{10}, \frac{9}{10}\right) \\
\phi(5) \rightarrow \left(\frac{1}{5}, \frac{2}{5}, \frac{3}{5}, \frac{4}{5}\right), \phi(4) \rightarrow \left(\frac{1}{4}, \frac{3}{4}\right) \\
\phi(2) \rightarrow \left(\frac{1}{2}\right), \phi(1) \rightarrow \left(\frac{1}{1}\right)
\end{array}$$

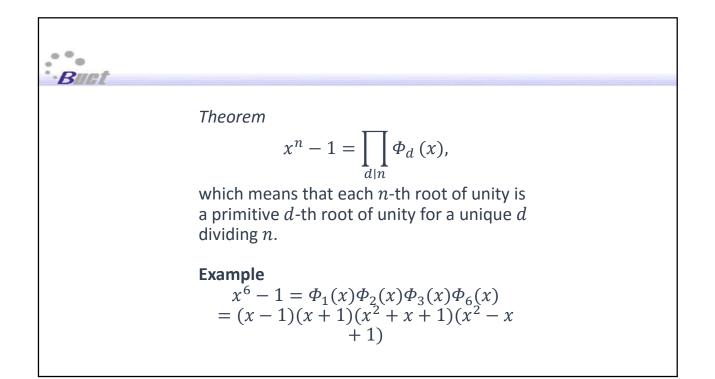


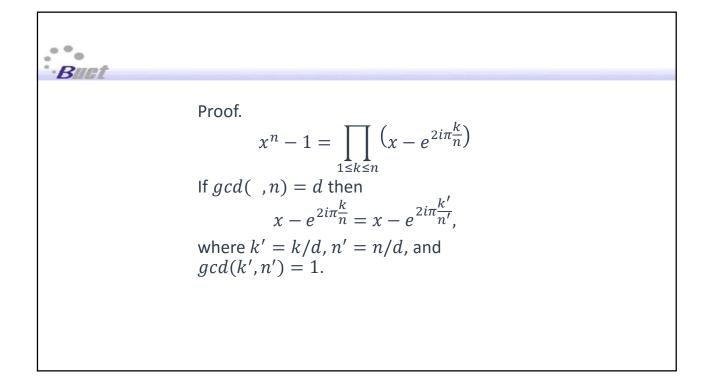


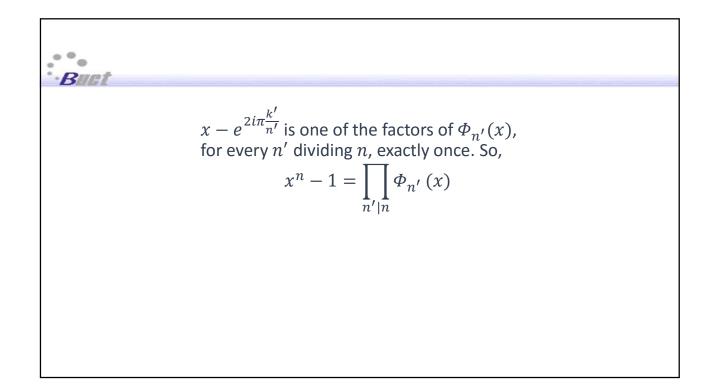


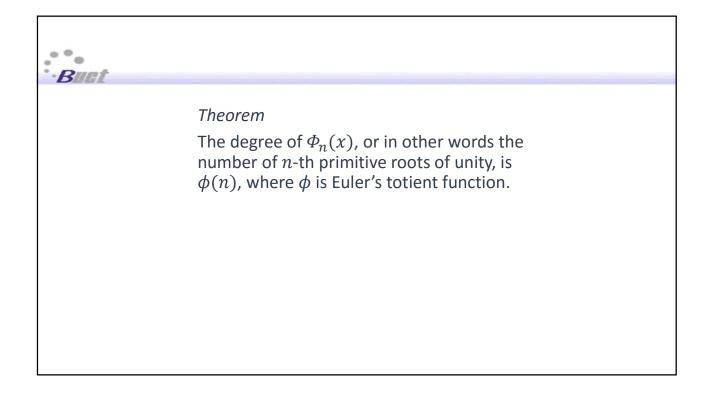






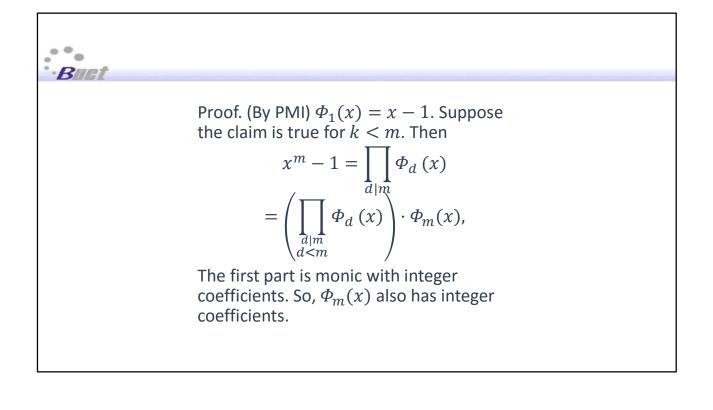


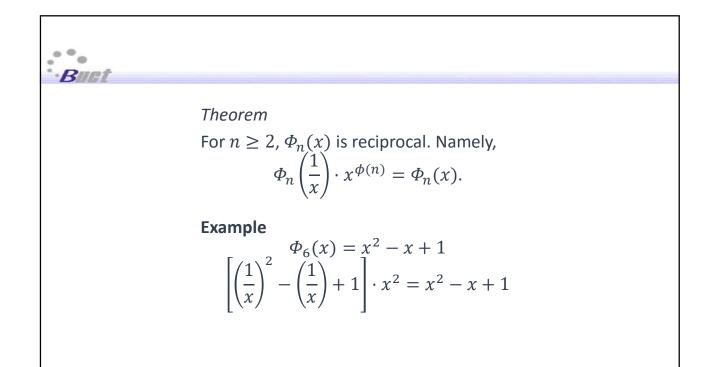


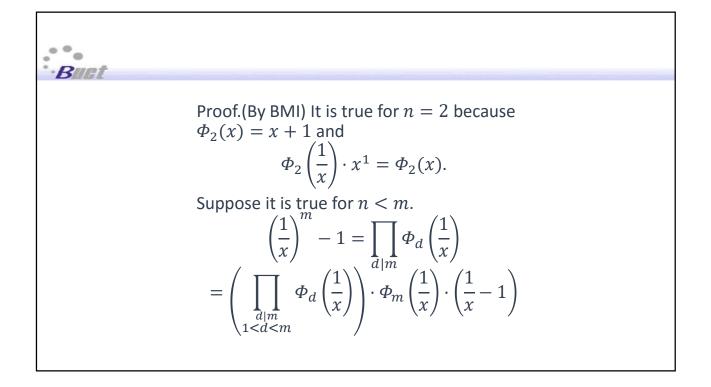


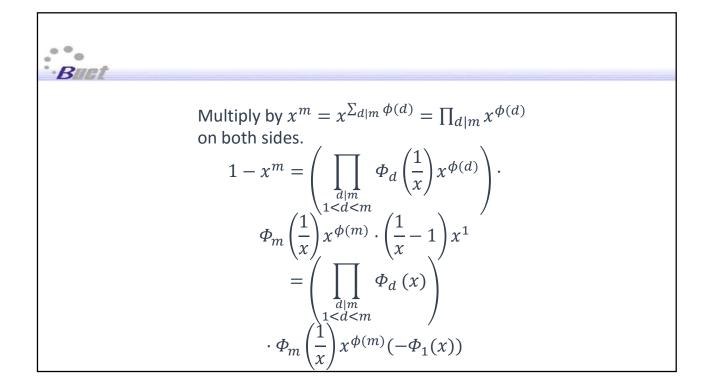


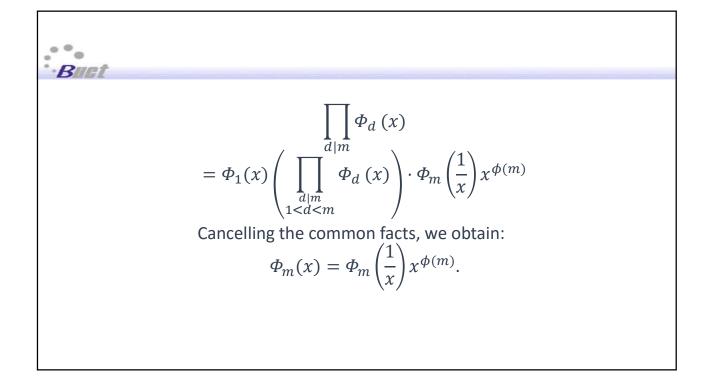
Theorem $\Phi_n(x)$ has integer coefficients.

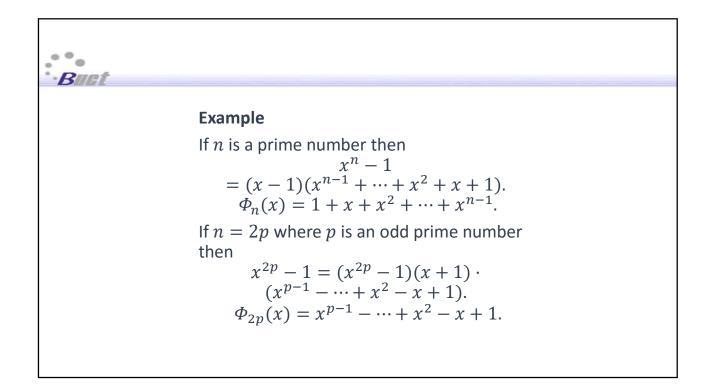


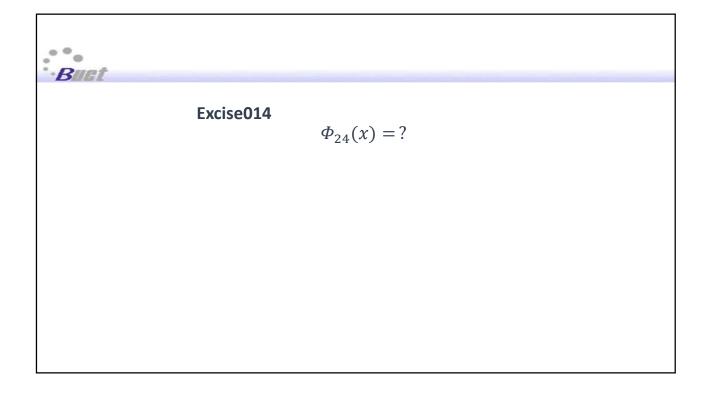


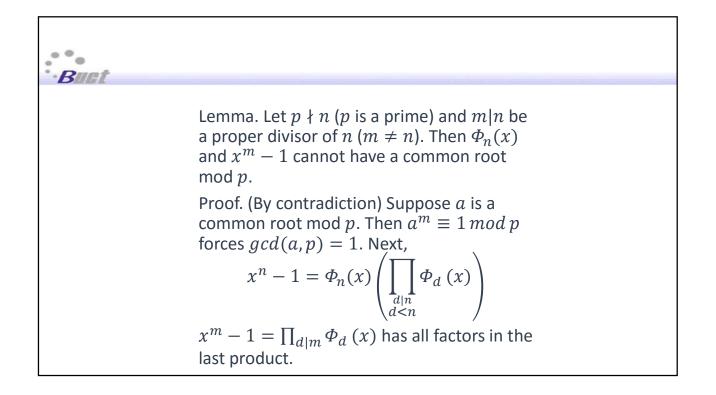


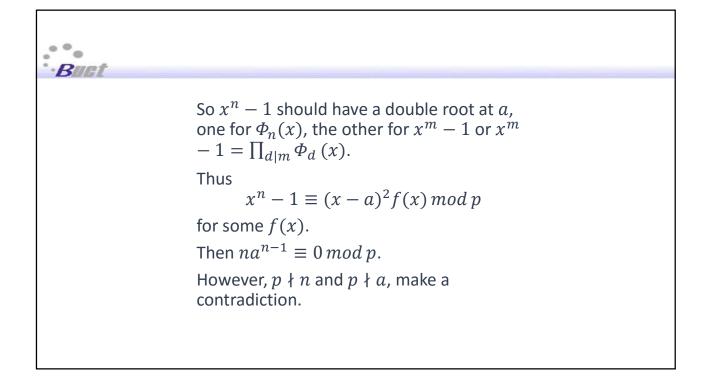


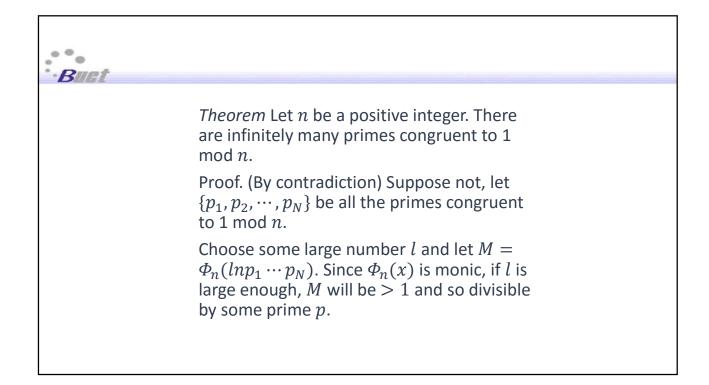


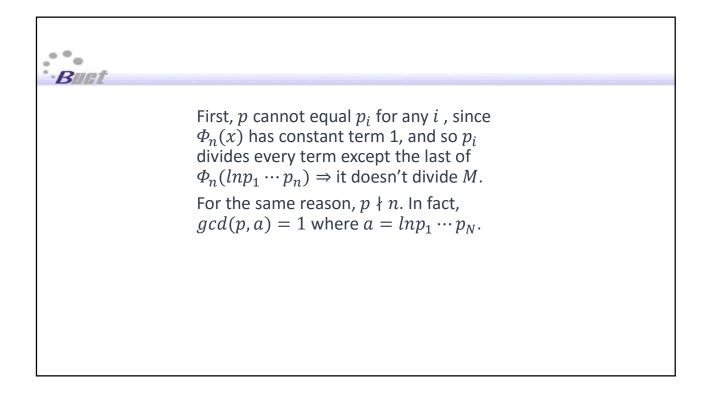


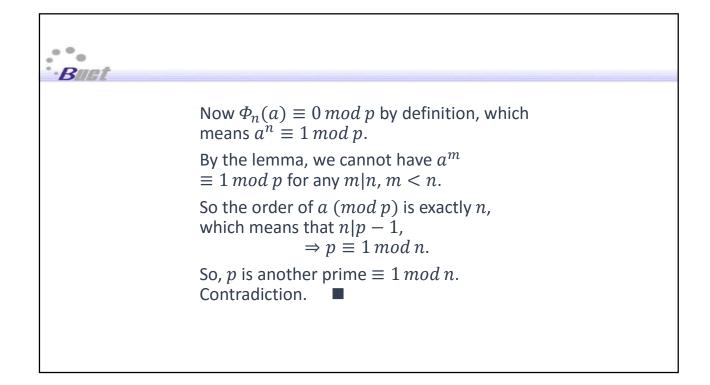


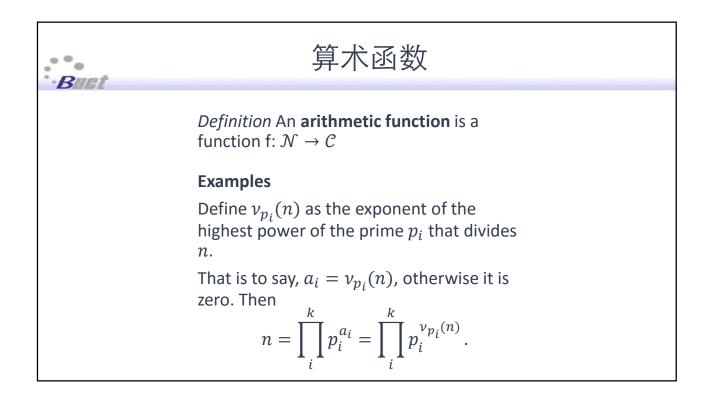


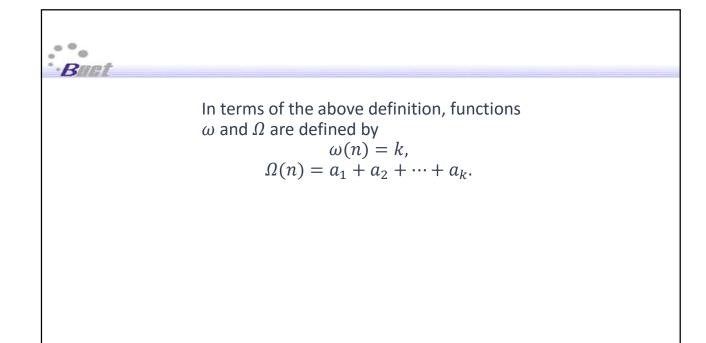


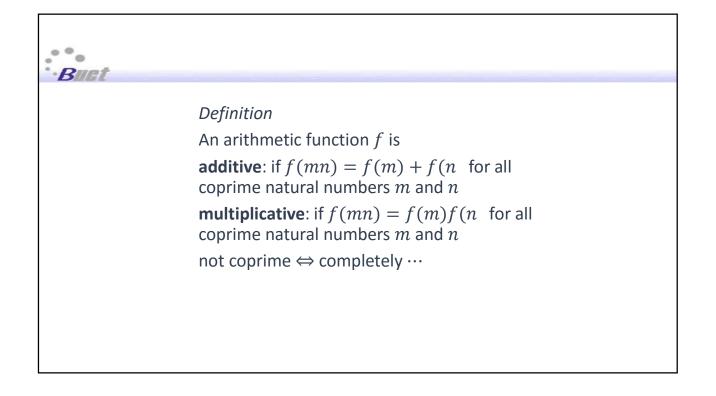


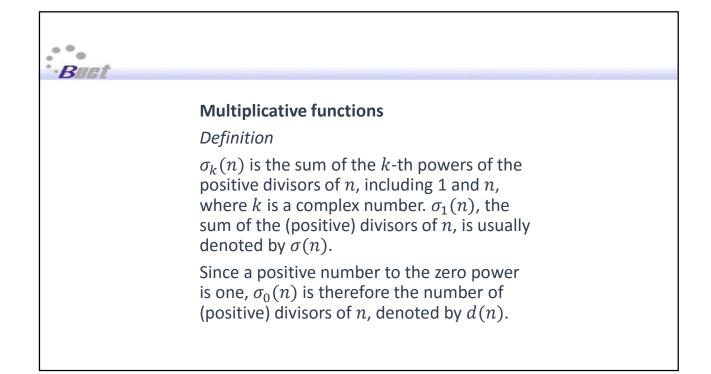


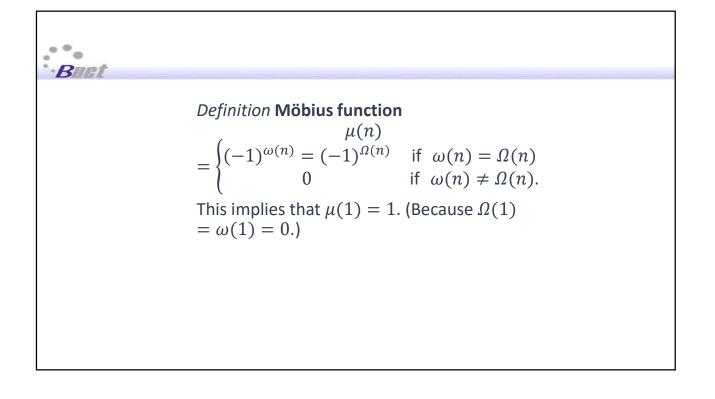


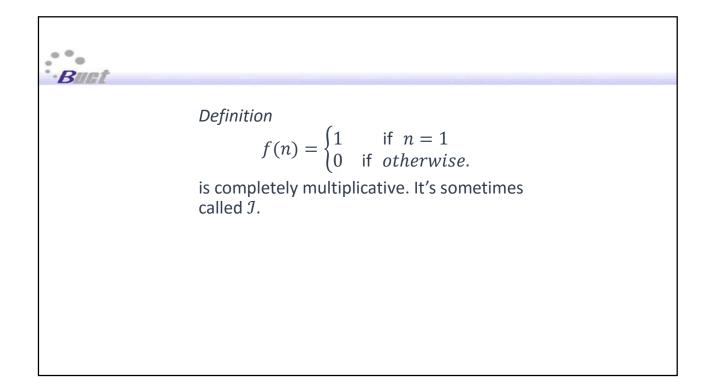


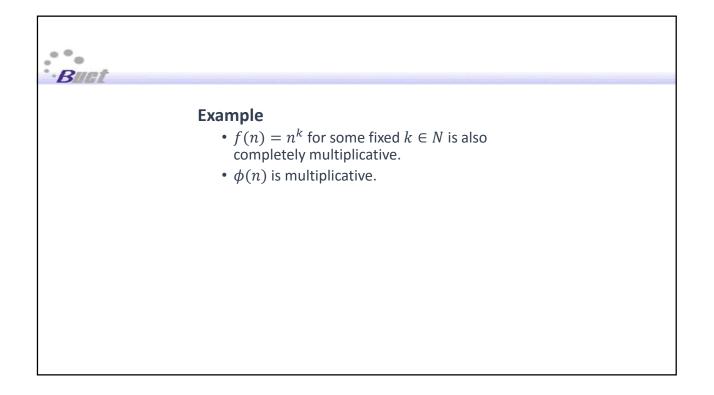


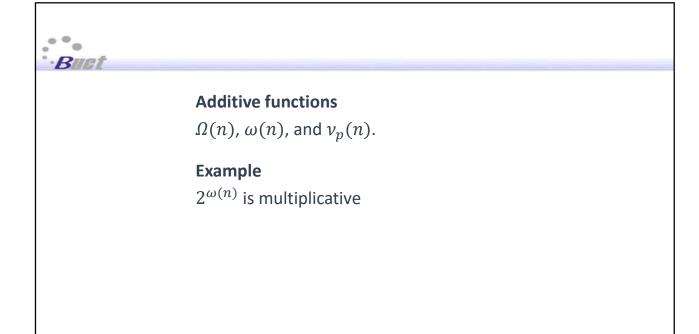


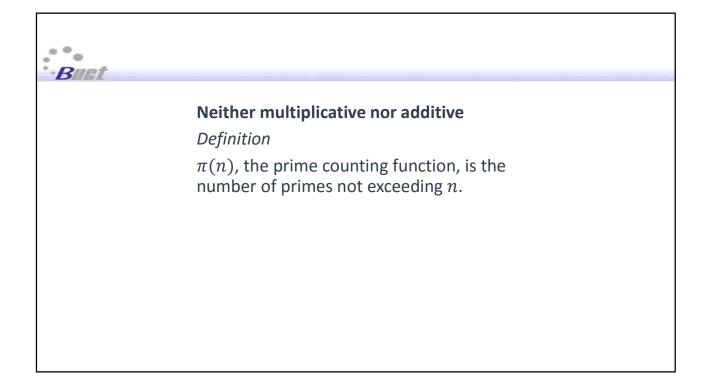


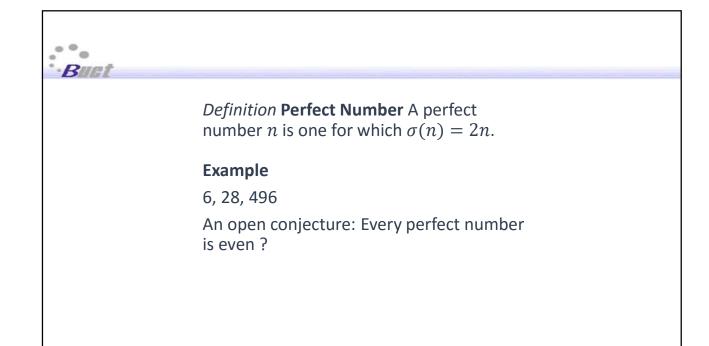


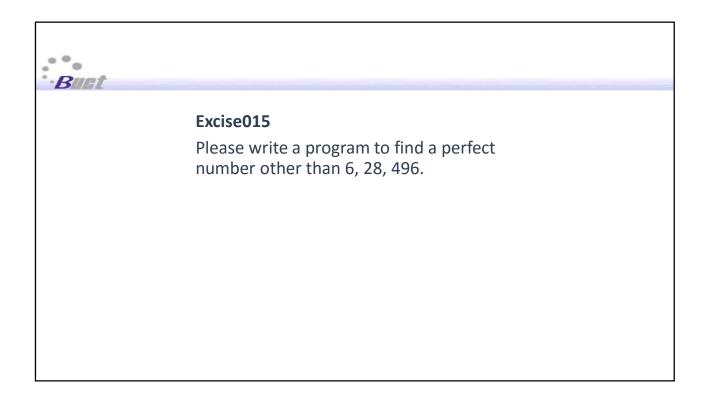


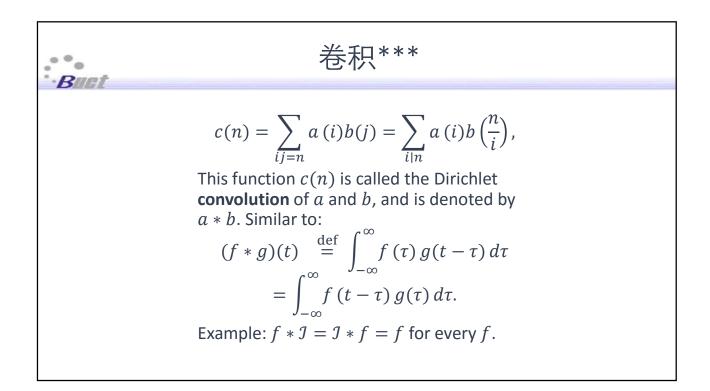


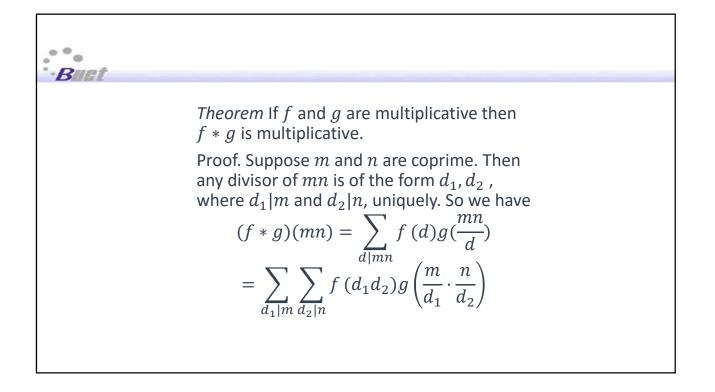












$$= \sum_{d_1|m} \sum_{d_2|n} f(d_1) f(d_2) g\left(\frac{m}{d_1}\right) g\left(\frac{n}{d_2}\right)$$
$$= \left(\sum_{d_1|m} f(d_1) g\left(\frac{m}{d_1}\right)\right) \left(\sum_{d_2|n} f(d_2) g\left(\frac{n}{d_2}\right)\right)$$
$$= (f * g)(m)(f * g)(n) \quad \bullet$$

