Calculus

De Moivre's Theorem

www.MathsResource.com

De Moivre's Theorem

Use De Moivre's Theorem to evaluate the following expression

$$\left(cos\frac{\pi}{6} + i\, sin\frac{\pi}{6}\right)^8$$

De Moivre's Theorem

$$(Cos\ \theta + iSin\ \theta)^n = cos\ (n\theta) + i\ sin(n\theta)$$

De Moivre's Theorem

$$\left(cos\frac{\pi}{6} + i\, sin\frac{\pi}{6}\right)^8$$

$$= \left[cos\left(8 \times \frac{\pi}{6}\right) + i\, sin\left(8 \times \frac{\pi}{6}\right)\right]$$

$$= \left[cos\left(\frac{4\pi}{3}\right) + i\, sin\left(\frac{4\pi}{3}\right)\right]$$