Resonance

R is independent of f
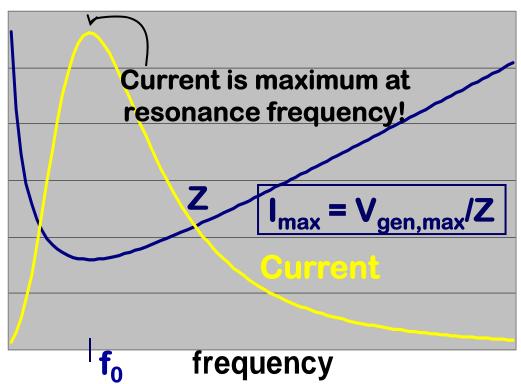
X_L increases with f

$$X_L = 2\pi f L$$

X_C decreases with f

$$X_C = 1/(2\pi f C)$$

Z: X_L and X_C subtract

$$Z = \sqrt{R^2 + (X_L - X_C)^2}$$

Resonance: $X_L = X_C$

$$f_0 = \frac{1}{2\pi\sqrt{LC}}$$

Resonance in AC Circuits

Current is maximum at resonance frequency!

Z

$I_{max} = V_{gen,max}/Z$

Current

f_0   **frequency**