A2+ 2.8 #18

$$\frac{x^2 - x - 12}{x^2 + 4} \leq \emptyset$$

$$\frac{(x+3)(x-4)}{x^2+4} \leq \emptyset \quad \left(\frac{P}{Q} \text{ Form}\right)$$

Zeros for $P = -3, 4$

Zeros for Q (No Real Zeros)

Now test each side

$x = -4 \Rightarrow \frac{P}{Q} = \frac{(-1)(-8)}{16+4} = +$

(Actual Value does not matter)

$x = 0 \Rightarrow \frac{P}{Q} = \frac{-12}{4} \Rightarrow -$

$x = 5 = \frac{P}{Q} = \frac{(8)(1)}{29} \Rightarrow +$

$\therefore$ Since $\frac{x^2 - x - 12}{x^2 + 4} \leq 0$

We are looking for $\frac{P}{Q}$ Negative

or Zero

$\therefore$ $-3 \leq x \leq 4$