Assignment 6

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1 question

The expression $\sim (p \leftrightarrow q)$ is equivalent to:

2 answer

$\rightarrow\sim (p \leftrightarrow q)$
$\rightarrow\sim (p \longrightarrow q) \bigwedge (q \longrightarrow p)$
$\rightarrow \sim (p \longrightarrow q) \bigvee \sim (q \longrightarrow p)$
BY DEMORGAN'S LAW;
$(p \bigwedge \sim q) \bigvee (q \bigwedge \sim p)$
Hence proved that
$\sim (p \leftrightarrow q) \equiv (p \bigwedge \sim q) \bigvee (q \bigwedge \sim p)$

3 conversion to AND and OR gates

$\rightarrow\sim (p \leftrightarrow q) \equiv (p \bigwedge \sim q) \bigvee (q \bigwedge \sim p)$
$\rightarrow\sim (p \leftrightarrow q) \equiv p.\overline{q} + q.\overline{p}$

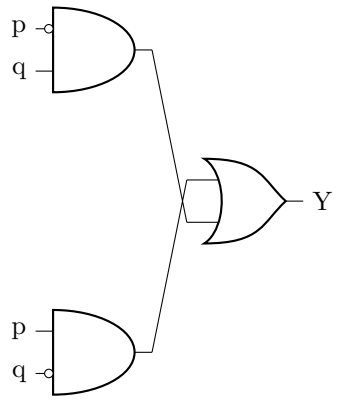

Figure 1: Logic Gate

$$Y = p.\overline{q} + q.\overline{p} \tag{1}$$