

Which of the following is a tautology?

- $(P \vee Q) \leftrightarrow (P \vee (Q \leftrightarrow (R \rightarrow Q)))$
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When the current in the primary circuit of a pair of coils changes from 10 A to zero in 50 milliseconds and the mutual inductance of the coils is 0.5 H, then the change in flux per turn (in Weber) in the secondary which has 100 turns is

- 8×10^{-2}
- 0.5×10^{-1}
- 7.5×10^{-2}
- 1×10^{-2}



If $y = \sin(x^{-1})$, then $\frac{dy}{dx}$ at $x = 1$ is

- $\frac{1}{2}$
- 1
- $\frac{1}{e}$
- $\frac{1}{\pi}$

The distance of the line $x + 3 = y + 4 = z + 5$ from the origin is

- $\sqrt{12}$
- 2
- $\sqrt{3}$
- $\sqrt{2}$

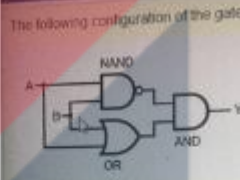
The equation $x^{30}(\log_3 x)^2 - \frac{1}{2}(\log_3 x) - 2 = \sqrt{3}$ has exactly two

- real roots
- irrational roots
- complex roots
- rational roots

The angle between the curves $y = x^3$ and $y = x^5 - x = 0$ is

- $\frac{\pi}{2}$
- 0
- $\frac{\pi}{3}$
- $\frac{\pi}{4}$

The following configuration of the gate is equivalent to



- NOR
- OR
- NAND
- XOR

The value of n for which the points $(1, 1)$, $(n, 4)$, $(2, 1)$ and $(2, 2)$ are vertices of the parallelogram is

- 4
- 10
- 1
- 10