

Quiz #2 Solutions

1. (a)

| P | Q | $\neg(P \vee (\neg Q))$ |
|-----|-----|-------------------------|
| T | T | F |
| T | F | F |
| F | T | T |
| F | F | F |

(b) $\neg P \wedge Q$

2. For all real numbers x , either $x = 0$ or $\sin(x) \neq x$.

3. (a) $\neg P =$ There exists a real number x so that $x^2 - 2x + 1 < 0$.

(b) Prove P . Let $x \in \mathbb{R}$ be arbitrary. Then $x^2 - 2x + 1 = (x - 1)^2$. Since the square of a real number is always ≥ 0 , we conclude that $x^2 - 2x + 1 \geq 0$.