

Handout #1 Domain of Elementary Functions:

1. $f = \frac{u}{v} \Rightarrow v \neq 0$

2. $f = \sqrt[2k]{u} \Rightarrow u \geq 0 \quad (k = 1, 2, 3, \dots)$

3. $f = \log_v u \Rightarrow u > 0, v > 0, v \neq 1$

4. $f = \tan u \Rightarrow u \neq \frac{\pi}{2} + k\pi \quad (k = 0, \pm 1, \pm 2, \dots)$

5. $f = \cot u \Rightarrow u \neq k\pi \quad (k = 0, \pm 1, \pm 2, \dots)$

6. $f = \arcsin u \Rightarrow -1 \leq u \leq 1$

7. $f = \arccos u \Rightarrow -1 \leq u \leq 1$

8. $f = u^v \Rightarrow u > 0$

$v \neq \text{constant}$ or $v = \text{irrational constant}$.

Important fact: All elementary functions are continuous in their domains except at the isolated points.