1. Johann Heinrich lambert
2. Ferdinand von lindemann
3. $\sqrt{3}$ is irrational
4. $\frac{355}{113} \approx \pi$

1. $\frac{11}{4} = 2\frac{3}{4} = 2 + \frac{1}{\frac{4}{3}} = 2 + \frac{1}{1+\frac{1}{3}}$

$4\overline{)11}$ → 2, $-8$, $3$

$3\overline{)4}$ → 1, $-3$, $1$ $= 1\frac{1}{3}$

2. Assume $\sqrt{2}$ is rational such that $\sqrt{2} = \frac{a}{b}$, where $\gcd(a,b) = 1$ and $b \neq 0$

then $2 = \frac{a^2}{b^2} \rightarrow 2b^2 = a^2$ since $2b^2$ is even then $a^2$ is even implying that $a$ is even so $a = 2k$, $k \in \mathbb{Z}$

Now we have $2b^2 = (2k)^2 \rightarrow 2b^2 = 4k^2$
$b^2 = 2k^2$ and now we see $b$ is even.
We have that $a, b$ are both even meaning that they can be divided by 2 but we already assumed $\gcd(a,b) = 1$ so contradiction. Thus $\sqrt{2}$ is irrational.

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