

§0.2 Homework Solutions

1) a) [BB] b) Hypothesis: triangle is right-angled, Conclusion: $a^2 + b^2 = c^2$ ($c = \text{hypotenuse}$)

c) [BB]

12) [BB]

16) [BB]

24) [BB]

25) Proof by Contradiction. Suppose that the conclusion is false i.e. $a > \sqrt{n}$ and $b > \sqrt{n}$.
Then $ab > \sqrt{n}\sqrt{n} = n$. But $ab = n$ which is a contradiction.
Therefore either $a \leq \sqrt{n}$ or $b \leq \sqrt{n}$ which is what needed to be proved.

32 a) [BB] b) Statement is false and $a=2$ is a counterexample

c) [BB] d) False and a counterexample is $a = \pi$, $b = 1 - \pi$
(since a, b both irrational but $a + b = 1$ which is rational)

e) [BB]