Answer on Question #45182 – Math - Other

Problem.

1) How do we use inductive reasoning in math besides patterns recognition?
2) Explain what it means to negate and give two examples.
3) How do we use statements to prove theories?

Solution.

1) Inductive reasoning is used commonly in math; for example, you may you use inductive reasoning to prove divisibility (that $n(n-1)(2n+1)$ is divisible by 6 for all integer n) or to prove inequalities ($(1+x)^n \geq nx+1$ for all integer n and real $x > -1$).

2) The negation is an operation on one logical value (often proposition) that produces a value of true when its operand is false and a value of false when its operand is false.
The negation of statement "I have more than 31 books" is "I have less or equal to 31 books". The negation of statement "I have 3 apples or 4 pears" is "I don't have 3 apples and 4 pears".

3) The theory is based on theorems. In mathematics, a theorem is a statement that has been proven on the basis of previously established statements, such as other theorems – and generally accepted statements, such as axioms.