Math 181 Quiz 4 Version A

1. Solve the inequality $|x^2 - 9| < 1$.

2. Use induction to show that

$$\frac{1}{1 \cdot 2} + \frac{1}{2 \cdot 3} + \frac{1}{3 \cdot 4} + \cdots + \frac{1}{n(n+1)} = \frac{n}{n+1}$$

for every positive integer n.

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3. Evaluate the binomial coefficient $\binom{5}{2}$.

4. State in terms of ε and δ what it means for $f(x)$ to be continuous at x_0.

5. Prove that if $\lim_{n\to\infty} a_n = L$ and $\lim_{n\to\infty} b_n = M$, then $\lim_{n\to\infty} (a_n + b_n) = L + M$.