Name: **Tutorial time:**

1. Solve the following inequalities:

   (a) $x^2 - 2x \geq 15$

   (b) $1 + \dfrac{3}{x+1} \leq \dfrac{4}{x}$

2. Give a one-sentence explanation (in words) why the following are true:

   (a) $\lim\limits_{x \to a} b = b$ for any real numbers a and b.

   (b) $\lim\limits_{x \to a} x = a$ for any real number x.

3. Using properties of limits and the facts given in Problem #2, show that for any *polynomial* $p(x)$, and any real number a, we have $\lim_{x \to a} p(x) = p(a)$.

4. Evaluate each of the following limits, or explain it does not exist.

   (a) $\lim_{x \to 3} \dfrac{x^2 - 9}{x^2 - 5x + 6}$

   (b) $\lim_{x \to 2} \dfrac{x^2 + 4}{x - 2}$

   (c) $\lim_{x \to 0} \dfrac{\sin(3x)}{\tan(5x)}$