

Name \_\_\_\_\_

- No calculators allowed.
- Show sufficient work to justify each answer.
- You have 20 minutes for this quiz.

1. (4 points) Consider the sequence of triangular numbers defined by the function  $t_n = \frac{n(n+1)}{2}$ .

(a) Find the first 5 terms of the sequence  $a_n = \left\{ \frac{2}{t_n} \right\}$ .

(b) Determine the limit of the sequence  $a_n$  with a picture or with algebra.

(c) List *all* of the following words that correctly describe the sequence  $a_n$ : alternating, bounded from above, bounded from below, strictly increasing, strictly decreasing, convergent, divergent.

2. (3 points) Find the general term  $b_n$  of the sequence  $\{0, -\frac{1}{3}, \frac{8}{5}, -\frac{27}{7}, \frac{64}{9}, \dots\}$

3. (3 points) Solve:  $\sqrt{2x+6} - x = -1$