

Calculus 1B Quiz 3

Name:

GSI: Paul Baginski

Student ID:

1. Compute:

$$\sum_{n=5}^{\infty} \left( \frac{-1}{\pi} \right)^n$$

2. Set:

$$a_n = \frac{n - \sqrt{2}}{n^2 - 2}.$$

Does  $\sum_{n=1}^{\infty} a_n$  converge?

(Hint: denominator factors!)

(turn over)

3. Fibonacci Sequence. Define the sequence  $F_n$  as follows:

$$F_1 = 1, \quad F_2 = 1, \quad F_{n+2} = F_n + F_{n+1}$$

and set

$$a_n = \frac{F_{2n}}{2n}.$$

Does  $\{a_n\}$  converge?

(Hint: Determine whether  $a_n$  is monotone or bounded. Do this by estimating  $F_{2n+2}$  in terms of  $F_{2n}$ .)