

# Math 200 - Quiz 2

September 5, 2012

Name key

Score \_\_\_\_\_

Show all work to receive full credit. Supply explanations when necessary.

1. (1 point) Find the first six terms of the arithmetic sequence whose difference is 4 and whose second term is 9.

$$\begin{array}{cccccc} \underline{5} & , & 9 & , & 13 & , & 17 & , & 21 & , & 25 \\ & & \vee & & \vee & & \vee & & \vee & & \vee \\ & & 4 & & 4 & & 4 & & 4 & & 4 \end{array}$$

2. (1 point) Joe made a conjecture that every odd number greater than three is the sum of two prime numbers. Give a counterexample to disprove Joe's conjecture. (Warning: 1 is not a prime number!)

$$11 = \underbrace{1 + 10 = 2 + 9 = 3 + 8 = 4 + 7 = 5 + 6}$$

NONE OF THESE IS THE SUM OF TWO PRIMES.

3. Consider the sequence: 8, 15, 22, 29, 36, ...

- (a) Find the 512th term.

$$N^{\text{TH}} \text{ TERM} = 7N + 1 \Rightarrow 512^{\text{TH}} \text{ TERM} = 7(512) + 1 = \boxed{3585}$$

- (b) How many terms are in the following list?

8, 15, 22, ..., 4551, 4558, 4565

$$7N + 1 = 4565$$

$$7N = 4564$$

$$N = 652$$

$\boxed{652 \text{ TERMS}}$

- (c) Compute the sum:  $8 + 15 + 22 + \dots + 4551 + 4558 + 4565$

$$4565 + \dots + 15 + 8$$

PAIRS ADD UP TO 4573

THERE ARE 652 TERMS (FROM ABOVE)

$$\text{Sum} = \frac{4573 (652)}{2} = \boxed{1,490,798}$$