

Name: KEY

### PRACTICE Quiz (13.1-13.5)

1. (7 points) Assume that the following sequence is arithmetic. Find the sum using the appropriate formulas:

$$4 + 10 + 16 + 22 + \dots + 484$$

① Find  $n$ :  $a_n = a_1 + (n-1)d$

$$484 = 4 + (n-1)6$$

$$484 = 4 + 6n - 6$$

$$484 = \underset{+2}{-2} + 6n$$

$$\frac{486}{6} = \frac{6n}{6}$$

$$n = 81$$

② Find sum:

$$S_n = \frac{n(a_1 + a_n)}{2}$$

$$S_{81} = \frac{81(4 + 484)}{2}$$

$$S_{81} = 19,764$$



2. (7 points) Assume that the following sequence is geometric. Find the infinite sum using the appropriate formulas:

$$2 - \frac{2}{5} + \frac{2}{25} - \frac{2}{125} + \dots$$

$$S = \frac{a_1}{1-r}$$

① Find  $r$ :  $r = \frac{-\frac{2}{5}}{2} = -\frac{2}{5} \cdot \frac{1}{2} = -\frac{1}{5}$

②  $S = \frac{2}{1 - (-\frac{1}{5})} = \frac{2}{\frac{5}{5} + \frac{1}{5}} = \frac{2}{\frac{6}{5}}$

$$S = 2 \cdot \frac{5}{6} = \frac{10}{6}$$

$$S = \frac{5}{3}$$

3. (3 points) Let  $a_1 = 3$  and  $a_n = a_{n-1} + 5$ .

Then  $a_3 = 13$

$$a_2 = a_{2-1} + 5 = a_1 + 5 = 3 + 5 = 8$$

$$a_2 = 8$$

$$a_3 = a_{3-1} + 5 = a_2 + 5 = 8 + 5 = 13$$