Series and Sigma Notation WS

Write using Sigma (Σ) notation.

① $24 + 32 + 40 + 48 + \ldots$ (+8, +8, +8; $d=8$)

n: 1 2 3 4 ...

$t_n = 24 + (n-1)(8)$

$t_n = 24 + 8n - 8$

$t_n = 16 + 8n$

$$\sum_{n=1}^{\infty} (16+8n)$$

② $5 + 10 + 15 + \ldots + 50$ (+5, +5)

$t_n = 5 + (n-1)(5)$ ← $n = 10$

$t_n = 5 + 5n - 5$

$t_n = 5n$

$$\sum_{n=1}^{10} 5n$$

③ $-6 - 1 + 4 + 9 + 14$ (+5, +5, +5; $d=5$; $n=5$)

$t_n = -6 + (n-1)(5)$

$t_n = -6 + 5n - 5$

$t_n = 5n - 11$

$$\sum_{n=1}^{5} (5n-11)$$

④ $6 - 12 + 24 - 48$ (−2, −2, −2; $r=-2$)

$t_n = 6(-2)^{n-1}$

$$\sum_{n=1}^{4} 6(-2)^{n-1}$$

Write each series in expanded form.

⑤ $\sum_{n=1}^{6} (n^2+1)$

n: 1 2 3 4 5 6

1+1 4+1 9+1 16+1 25+1 36+1

$2 + 5 + 10 + 17 + 26 + 37$

⑥ $\sum_{n=1}^{5} \frac{1}{n^2}$

n: 1 2 3 4 5

$\frac{1}{1}$ $\frac{1}{4}$ $\frac{1}{9}$ $\frac{1}{16}$ $\frac{1}{25}$

$$1 + \frac{1}{4} + \frac{1}{9} + \frac{1}{16} + \frac{1}{25}$$