

Ex 10.7

$$\begin{aligned} \textcircled{5} \quad a &= 2 & S_{10} &= \frac{10}{2} (2 + 29) \\ t_{10} &= 29 & &= 5(31) \\ S_{10} &=? & &= 155 \\ n &= 10 & & \end{aligned}$$

$$\begin{aligned} 8b) \quad t_1 &= 95 \\ t_1 &= a + (1-1)d \\ t_1 &= a + 0d \\ a + 0d &= 95 \end{aligned}$$

or  $a = 95$

$$S_{12} = 876$$

$$S_{12} = \frac{12}{2} [2a + (12-1)d]$$

$$S_{12} = 6[2a + 11d]$$

$$S_{12} = 12a + 66d$$

$$12a + 66d = 876$$

$$12(95) + 66d = 876$$

$$1140 + 66d = 876$$

$$66d = -264$$

$$d = -4$$

$$a = 95$$

$$d = -4$$

$$S_{22} = ?$$

$$n = 22$$

$$S_{22} = \frac{22}{2} [2(95) + (22-1)(-4)]$$

$$= 11 [190 + (21)(-4)]$$

$$= 11 [190 - 84]$$

$$= 11 [106]$$

$$= 1166$$

$$\textcircled{5} + 7 + 9 + 11 + 13 \dots$$

$$a = 5$$

$$d = 2$$

$$t_6 = ?$$

$$S_6 =$$

$$t_6 = 5 + (6-1)(2)$$

$$= 5 + 5(2)$$

$$= 15$$

$$S_6 = \frac{6}{2} [2(5) + (6-1)(2)]$$

$$= 3 [10 + 10]$$

$$= 60$$

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$$S_6 = \frac{6}{2} (5 + 15)$$

$$= 3(20)$$

$$= 60$$

Ex. 10.9

$$\textcircled{1} \text{ b) } 2 + \frac{2}{3} + \frac{2}{9} + \frac{2}{27} + \dots$$

$$S_4 = ?$$

$$a = 2$$

$$r = \frac{1}{3}$$

$$n = 4$$

$$S_n = \frac{a(r^n - 1)}{r - 1}$$

$$S_4 = \frac{2\left(\left(\frac{1}{3}\right)^4 - 1\right)}{\frac{1}{3} - 1}$$

$$= \frac{2\left(\frac{1}{81} - 1\right)}{-\frac{2}{3}}$$

$$= \cancel{2} \left( \frac{-\cancel{80}}{\cancel{81} \cdot 27} \right) \left( \frac{\cancel{3}}{-\cancel{2}} \right)$$

$$= \frac{80}{27}$$

Ex. 10.9

$$\textcircled{5} \text{ b) } 1 + \frac{5}{2} + \frac{25}{4} + \dots + \frac{15625}{64}$$

$$a = 1$$

$$t_n = ar^{n-1}$$

$$r = \frac{5}{2}$$

$$\frac{15625}{64} = (1) \left(\frac{5}{2}\right)^{n-1}$$

$$t_n = \frac{15625}{64}$$

$$\frac{15625}{64} = \left(\frac{5}{2}\right)^{n-1}$$

$$S_n = ?$$

$$n = ?$$

$$\left(\frac{5}{2}\right)^6 = \left(\frac{5}{2}\right)^{n-1}$$

$$6 = n - 1$$

$$7 = n$$

$$S_7 = \frac{1 \left( \left(\frac{5}{2}\right)^7 - 1 \right)}{\frac{5}{2} - 1}$$

$$= \frac{1 \left( \frac{78125}{128} - 1 \right)}{\frac{3}{2}}$$

$$= \frac{1 \left( \frac{78125}{128} - \frac{128}{128} \right)}{\frac{3}{2}}$$

$$= \frac{\overset{25999}{\cancel{78125}}}{\underset{64}{\cancel{128}}} \left( \frac{\cancel{2}^1}{\cancel{3}_1} \right)$$

$$= \boxed{\frac{25999}{64}}$$