(1) $a_n = 2n + 1$

$a(n+1) = 2(n-1) + 1$

$2n - 2 + 1$

$= 2n - 1$

Now,

The common difference will be

$d = a(n) - a(n-1)$

$d = (2n+1) - (2n-1)$

$d = 2n + 1 - 2n + 1$

$d = 2$

(2) $a = 2$

$d = 5 - 2 = 3$

$a_n = a + (n-1)d$

$59 = 2 + (n-1)3$

$57/3 = n - 1$

$19 = n - 1$

$n = 20$

(3) (a) 1

(4) (c) 23

$a_n = a + (n-1)d$

$35 = a_{11} = a + 10d$

$41 = a_{13} = a + 12d$

$$\begin{aligned} 35 &= a + 10d \\ 41 &= a + 12d \\ \hline -6 &= -2d \\ 6 &= 2d \\ 3 &= d \end{aligned}$$

) Given the series AP

$\sqrt{8}, \sqrt{18}, \sqrt{32}.$

we can write this series,

$2\sqrt{2}, 3\sqrt{2}, \sqrt{2}, 4\sqrt{2}$

and we can saw same diffnence hence

$2\sqrt{2}, 3\sqrt{2}, 4\sqrt{2}$

next term depends same diffence on, whose diffnence is $\sqrt{2}$

$2\sqrt{2}, 3\sqrt{2}, 4\sqrt{2}, 5\sqrt{2}$

we can write

$\sqrt{8}, \sqrt{18}, \sqrt{32}, \sqrt{50}$

So

$a+4d = a+9d = 5a$

So $5a = a+d$ (first case)

$5a-a = 4d$

$4a = 4d$

$a = d$

So $a_{15} = a+14d$

$a+14a = 15a$

and $5a = a+9d$

$4a = 9d$

$d = 4/9\,a$

So $a_{15} = a+14d$

$a + 14 \times 4/9\,a$

$a + 56a/9$

$(9a + 56a)/9$

$64a/9$

$7.1a$

(8) (b) 3, 7, 12, 18

(9) (a) 400

(10) (d) 210