



**Zadatak 31.** U sljedećoj tablici zadana su tri podatka o aritmetičkom nizu. Izračunaj preostala dva.

	$n$	$d$	$a_1$	$a_n$	$S_n$
<b>1)</b>		5	4	54	
<b>2)</b>	14		-5	86	
<b>3)</b>			4	99	1030
<b>4)</b>	18	3	4		
<b>5)</b>		-4	4		180
<b>6)</b>	15		12		-135
<b>7)</b>	28	6		62	
<b>8)</b>		2		10	18
<b>9)</b>	21			155	945
<b>10)</b>	16	-4			1440

**Rješenje.** Koristit ćemo formule:  $a_n = a_1 + (n - 1)d$ ,  $S_n = \frac{n}{2}(a_1 + a_n)$

1)

$$54 = 4 + (n - 1) \cdot 5$$

$$(n - 1) \cdot 5 = 50$$

$$n - 1 = 10$$

$$n = 11;$$

$$S_{11} = \frac{11}{2}(a_1 + a_{11})$$

$$S_{11} = \frac{11}{2}(4 + 54) = 11 \cdot 29$$

$$S_{11} = 319.$$

2)

$$86 = -5 + 13 \cdot d$$

$$13d = 91$$

$$d = 7;$$

$$S_{14} = \frac{14}{2}(-5 + 86) = 7 \cdot 81$$

$$S_{14} = 567.$$

3)

$$1030 = \frac{n}{2}(4 + 99)$$

$$2060 = n \cdot 103$$

$$n = 20;$$

$$99 = 4 + 19d$$

$$19d = 95$$

$$d = 5.$$

4)

$$a_{18} = 4 + 17 \cdot 3$$

$$a_{18} = 55;$$

$$S_{18} = \frac{18}{2}(4 + 55) = 9 \cdot 59$$

$$S_{18} = 531.$$

5)

$$a_n = 40 + (n - 1) \cdot (-4)$$

$$180 = \frac{n}{2}(40 + a_n)$$

$$a_n + 4n = 44$$

$$\underline{n(40 + a_n) = 360}$$

$$n(40 + 44 - 4n) = 360$$

$$n(84 - 4n) - 360 = 0$$

$$-4n^2 + 84n - 360 = 0 / : (-4)$$

$$n^2 - 21n + 90 = 0$$

$$(n - 6)(n - 15) = 0$$

$$n_1 = 6, n_2 = 15;$$

$$a_6 = 20, a_{15} = -16.$$

6)

$$-135 = \frac{15}{2}(12 + a_{15})$$

$$15(12 + a_{15}) = -270$$

$$12 + a_{15} = -18$$

$$a_{15} = -30;$$

$$-30 = 12 + 14d$$

$$14d = -42$$

$$d = -3.$$

7)

$$62 = a_1 + 27 \cdot 6$$

$$a_1 = -100;$$

$$S_{28} = \frac{28}{2}(-100 + 62)$$

$$S_{28} = 14(-38)$$

$$S_{28} = -532.$$

8)

$$10 = a_1 + (n - 1) \cdot 2$$

$$18 = \frac{n}{2}(a_n + 10)$$

$$\underline{a_1 + 2n = 12}$$

$$\underline{n(a_1 + 10) = 36}$$

$$n(12 - 2n + 10) = 36$$

$$22n - 2n^2 - 36 = 0 / : (-2)$$

$$n^2 - 11n + 18 = 0$$

$$(n - 2)(n - 9) = 0$$

$$n_1 = 2, n_2 = 9;$$

$$(a_1)_1 = 8, (a_1)_2 = -6.$$

9)

$$945 = \frac{21}{2}(a_1 + 155)$$

$$21a_1 + 3255 = 1890$$

$$a_1 = -65;$$

$$155 = -65 + 20 \cdot d$$

$$20d = 220$$

$$d = 11.$$

10)

$$a_n - a_1 = 15(-4)$$

$$1440 = \frac{16}{2}(a_1 + a_n)$$

$$\underline{a_n - a_1 = -60}$$

$$\underline{a_n + a_1 = 180}$$

$$2a_n = 120 \implies a_n = 60;$$

$$60 - a_1 = -60 \implies a_1 = 120.$$