Rešitve nalog: Analitična geometrija

1 Enačba premice in ravnine

1.1. (a) $\frac{x-1}{2} = y - 1 = 1 - z$ (b) $x = 1$, $y = z - 1$

1.2. (a) $x + y + z = 4$ (b) $x - y - 2z = -3$ (c) $2x + y + 8z = 9$

1.3. (a) Točka $(2, 3, 1)$. (b) Premica z enačbo $\frac{x-1}{2} = \frac{2-y}{3} = \frac{9-z}{5}$.

1.4. (a) Točka $(1, 1, 1)$. (b) Točka $(3, 2, 2)$. (c) Točka $(0, 3, -1)$.

1.5. (a) $\left(\frac{10}{3}, -\frac{5}{3}, \frac{2}{3}\right)$ (b) $(2, 1, 0)$

1.6. (a) $\frac{x-2}{5} = \frac{y-1}{2} = \frac{z-2}{7}$ (b) $x = z$, $y = 1$

1.7. $\frac{x-1}{2} = \frac{y-2}{3} = z + 1$

1.8. $\frac{1-x}{2} = \frac{y-1}{3} = \frac{z-5}{7}$

1.9. $\left(1 + \frac{2}{\sqrt{3}}, 1 - \frac{1}{\sqrt{3}}, 1 - \frac{1}{\sqrt{3}}\right)$

1.10. $(3, 1, 4)$, $(4, 5, 6)$, $(2, 0, 3)$, $(6, 2, 4)$, $(7, 6, 6)$, $(8, 7, 7)$, $(3, 4, 5)$, $(7, 3, 5)$

2 Razdalje med točkami, premicami in ravninami

2.1. (a) $\frac{1}{\sqrt{29}}$, 0 in $\frac{38}{\sqrt{29}}$ (b) $\frac{3\sqrt{3}}{5}$ in 3

2.2. (a) $\frac{1}{\sqrt{5}}$ (b) $\frac{1}{\sqrt{3}}$

2.3. 4

2.4. $10x - 9y - 7z = -8$

2.5. $(4, -3, 1)$, $(-2, 3, 1)$, $(4, 3, -5)$ in $(6, 5, 3)$

2.6. $x - y + z = 3$ in $x + y - z = 3$

2.7. Enačba sfere je $(x-1)^2 + \left(y - \sqrt{3}\right)^2 + \left(z - 4 - \sqrt{3}\right)^2 = 12$. Presek te sfere z ravnino $z = 0$ je prazna množica.