

Úpravy vzorců

Zadání

Vzorec	Vyjádřete veličinu
1) $S = \frac{a \cdot v_a}{2}$	v_a
2) $S = \pi r^2$	r
3) $S = 6a^2$	a
4) $V = \frac{4}{3} \pi r^3$	r
5) $S = \frac{\pi d^2}{4}$	d
6) $S = 2(ab + bc + ac)$	c
7) $c^2 = a^2 + b^2$	b
8) $S = \frac{a^2 \sqrt{3}}{4}$	a
9) $S = \frac{a+c}{2} \cdot v$	a
10) $\frac{1}{f} = \frac{1}{a} + \frac{1}{b}$	b
11) $\frac{\sin \alpha}{\sin \beta} = \frac{a}{b}$	b
12) $c^2 = a^2 + b^2 - 2ab \cos \alpha$	$\cos \alpha$
13) $1 + \frac{1}{b} = \frac{2}{ab}$	a
14) $c = a - b \cdot \frac{c}{2}$	c
15) $s = v_0 t + \frac{at^2}{2}$	a
16) $v_0 = \frac{1}{2} \cdot g(t_1 + t_2)$	t_1
17) $I = \frac{nE}{R + nr}$	n
18) $m_1 c_1 (t - t_1) = m_2 c_2 (t_2 - t)$	t

Řešení

1)

$$S = \frac{a \cdot v_a}{2} \quad / \cdot 2$$

$$2S = a \cdot v_a \quad / : a$$

$$v_a = \frac{2S}{a}$$

2)

$$S = \pi r^2 \quad / : \pi$$

$$\frac{S}{\pi} = r^2$$

$$r = \sqrt{\frac{S}{\pi}}$$

3)

$$S = 6a^2 \quad / : 6$$

$$\frac{S}{6} = a^2$$

$$a = \sqrt{\frac{S}{6}}$$

4)

$$V = \frac{4}{3} \pi r^3 \quad / \cdot 3$$

$$3V = 4\pi r^3 \quad / : 4\pi$$

$$\frac{3V}{4\pi} = r^3$$

$$r = \sqrt[3]{\frac{3V}{4\pi}}$$

5)

$$S = \frac{\pi d^2}{4} \quad / \cdot 4$$

$$4S = \pi d^2 \quad / : \pi$$

$$\frac{4S}{\pi} = d^2$$

$$d = \sqrt{\frac{4S}{\pi}}$$

6)

$$S = 2(ab + bc + ac)$$

$$S = 2ab + 2bc + 2ac$$

$$S - 2ab = 2bc + 2ac$$

$$S - 2ab = c(2b + 2a) \quad / : 2b + 2a$$

$$c = \frac{S - 2ab}{2a + 2b}$$

$$c = \frac{S - 2ab}{2(a + b)}$$

7)

$$c^2 = a^2 + b^2$$

$$c^2 - a^2 = b^2$$

$$b = \sqrt{c^2 - a^2}$$

8)

$$S = \frac{a^2 \sqrt{3}}{4} \quad / \cdot 4$$

$$4S = a^2 \sqrt{3} \quad / : \sqrt{3}$$

$$\frac{4S}{\sqrt{3}} = a^2$$

$$a = \sqrt{\frac{4S}{\sqrt{3}}}$$

9)

$$S = \frac{a + c}{2} \cdot v$$

$$S = \frac{(a + c) \cdot v}{2} \quad / \cdot 2$$

$$2S = (a + c) \cdot v$$

$$2S = av + cv$$

$$2S - cv = av \quad / : v$$

$$a = \frac{2S - cv}{v}$$

10)

$$\frac{1}{f} = \frac{1}{a} + \frac{1}{b} \quad / \cdot fab$$

$$ab = fb + fa$$

$$ab - fb = fa$$

$$b(a - f) = fa \quad / : a - f$$

$$b = \frac{fa}{a - f}$$

11)

$$\frac{\sin \alpha}{\sin \beta} = \frac{a}{b} \quad / \cdot \sin \beta \cdot b$$

$$b \cdot \sin \alpha = a \cdot \sin \beta \quad / : \sin \alpha$$

$$b = \frac{a \cdot \sin \beta}{\sin \alpha}$$

12)

$$c^2 = a^2 + b^2 - 2ab \cos \alpha$$

$$2ab \cos \alpha = a^2 + b^2 - c^2 \quad / : 2ab$$

$$\cos \alpha = \frac{a^2 + b^2 - c^2}{2ab}$$

13)

$$1 + \frac{1}{b} = \frac{2}{ab} \quad / \cdot ab$$

$$ab + a = 2$$

$$a(b+1) = 2 \quad / : (b+1)$$

$$a = \frac{2}{b+1}$$

14)

$$c = a - b \cdot \frac{c}{2}$$

$$c = a - \frac{bc}{2} \quad / \cdot 2$$

$$2c = 2a - bc$$

$$2c + bc = 2a$$

$$c(2+b) = 2a \quad / : (2+b)$$

$$c = \frac{2a}{2+b}$$

15)

$$s = v_0 t + \frac{at^2}{2} \quad / \cdot 2$$

$$2s = 2v_0 t + at^2$$

$$2s - 2v_0 t = at^2 \quad / : t^2$$

$$a = \frac{2s - 2v_0 t}{t^2}$$

16)

$$v_0 = \frac{1}{2} \cdot g(t_1 + t_2)$$

$$v_0 = \frac{g(t_1 + t_2)}{2} \quad / \cdot 2$$

$$2v_0 = g(t_1 + t_2)$$

$$2v_0 = gt_1 + gt_2$$

$$2v_0 - gt_2 = gt_1 \quad / : g$$

$$t_1 = \frac{2v_0 - gt_2}{g}$$

17)

$$I = \frac{nE}{R + nr} \quad / \cdot (R + nr)$$

$$I(R + nr) = nE$$

$$IR + Inr = nE$$

$$IR = nE - Inr$$

$$IR = n(E - Ir) \quad / : (E - Ir)$$

$$n = \frac{IR}{E - Ir}$$

18)

$$m_1 c_1 (t - t_1) = m_2 c_2 (t_2 - t)$$

$$m_1 c_1 t - m_1 c_1 t_1 = m_2 c_2 t_2 - m_2 c_2 t$$

$$m_1 c_1 t + m_2 c_2 t = m_1 c_1 t_1 + m_2 c_2 t_2$$

$$t(m_1 c_1 + m_2 c_2) = m_1 c_1 t_1 + m_2 c_2 t_2 \quad / : (m_1 c_1 + m_2 c_2)$$

$$t = \frac{m_1 c_1 t_1 + m_2 c_2 t_2}{m_1 c_1 + m_2 c_2}$$