

LEMBAR KEGIATAN PESERTA DIDIK (LKPD)
MATEMATIKA X

Materi : Bentuk Akar

Kelas/Semester : X/Gasal

Kegiatan 1

Nama :

Kelas/ No : /

1. Pahami konsep berkaitan dengan operasi bentuk akar berikut.

1. $a\sqrt{p} + b\sqrt{p} = (a + b)\sqrt{p}$
2. $a\sqrt{p} - b\sqrt{p} = (a - b)\sqrt{p}$
3. $a \cdot b\sqrt{p} = ab\sqrt{p}$
4. $a\sqrt{p} \cdot b\sqrt{q} = a \cdot b\sqrt{pq}$
5. $\frac{\dots}{\sqrt{a}} = \frac{\dots}{\sqrt{a}} \times \frac{\sqrt{a}}{\sqrt{a}}$ (sekawan dari $\sqrt{a}$ adalah $\sqrt{a}$)
6. $\frac{\dots}{\sqrt{a} + \sqrt{b}} = \frac{\dots}{\sqrt{a} + \sqrt{b}} \times \frac{\sqrt{a} - \sqrt{b}}{\sqrt{a} - \sqrt{b}}$ (sekawan dari $\sqrt{a} + \sqrt{b}$ adalah $\sqrt{a} - \sqrt{b}$)
7. $\frac{\dots}{\sqrt{a} - \sqrt{b}} = \frac{\dots}{\sqrt{a} - \sqrt{b}} \times \frac{\sqrt{a} + \sqrt{b}}{\sqrt{a} + \sqrt{b}}$ (sekawan dari $\sqrt{a} - \sqrt{b}$ adalah $\sqrt{a} + \sqrt{b}$)

2. Selesaikan operasi bentuk akar berikut.

a. $3\sqrt{3} - 5\sqrt{3} + 4\sqrt{3} = (\quad - \quad + \quad)\sqrt{3} = \quad \sqrt{3}$

b. $3(5\sqrt{2}) = \quad \times \quad \sqrt{2} = \quad \sqrt{2}$

c. $2\sqrt{3} \cdot 4\sqrt{5} = 2 \cdot 4 \cdot \sqrt{3} \cdot \sqrt{5} = \quad \sqrt{15}$

d. $3\sqrt{5} + \sqrt{20} - \frac{1}{3}\sqrt{45} = 3\sqrt{5} + \sqrt{4 \cdot 5} - \frac{1}{3} \cdot \sqrt{9 \cdot 5}$

$= 3\sqrt{5} + \sqrt{5} - \frac{1}{3} \cdot \sqrt{5} = (\quad + \quad - \quad)\sqrt{5} = \quad \sqrt{5}$

e. $3\sqrt{24} - \sqrt{150} + 2\sqrt{54} = 3\sqrt{4 \cdot 6} - \sqrt{25 \cdot 6} + 2 \cdot \sqrt{9 \cdot 6}$

$= 3 \cdot \sqrt{6} - \sqrt{6} + 2 \cdot \sqrt{6} = (\quad - \quad + \quad)\sqrt{6}$

$= \quad \sqrt{6}$

f. $\sqrt{320} + \frac{1}{2}\sqrt{500} - \sqrt{125} = \sqrt{64 \cdot 5} + \frac{1}{2}\sqrt{100 \cdot 5} - \sqrt{25 \cdot 5}$

$= \sqrt{5} + \frac{1}{2} \cdot \sqrt{5} - 5\sqrt{5} = (\quad + \quad - 5)\sqrt{5} = \quad \sqrt{5}$

g. $2\sqrt{3}(5\sqrt{6} - 4\sqrt{3}) = 2\sqrt{3} \cdot 5\sqrt{6} - 2\sqrt{3} \cdot 4\sqrt{3}$

$$= \sqrt{18} - 8\sqrt{9} = \sqrt{9 \cdot 2} - 8 \cdot 3 = \sqrt{2} - 24$$

$$\text{h. } (3 - \sqrt{5})(3 + \sqrt{5}) = 3^2 - (\sqrt{5})^2 = -5 =$$

$$\text{i. } (\sqrt{5} - \sqrt{2})(\sqrt{5} + \sqrt{2}) = (\sqrt{5})^2 - (\sqrt{2})^2 = - =$$

$$\begin{aligned} \text{j. } (1 + \sqrt{2})(3 - 4\sqrt{2}) &= 1 \cdot 3 - 1 \cdot 4\sqrt{2} + \sqrt{2} \cdot 3 - \sqrt{2} \cdot 4\sqrt{2} \\ &= -4\sqrt{2} + 3\sqrt{2} - 4\sqrt{4} = -1\sqrt{2} - 4 \cdot 2 = -\sqrt{2} \end{aligned}$$

$$\text{k. } \frac{10}{\sqrt{2}} = \frac{10}{\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}} = \frac{10\sqrt{2}}{\sqrt{2}} = \sqrt{2}$$

$$\text{l. } \frac{\sqrt{2}}{6\sqrt{3}} = \frac{\sqrt{2}}{6\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{6}}{6} = \frac{\sqrt{6}}{6}$$

$$\begin{aligned} \text{m. } \frac{8\sqrt{5}}{3+\sqrt{5}} &= \frac{8\sqrt{5}}{3+\sqrt{5}} \times \frac{3-\sqrt{5}}{3-\sqrt{5}} = \frac{8\sqrt{5}(3-\sqrt{5})}{3^2-(\sqrt{5})^2} \\ &= \frac{8\sqrt{5}(3-\sqrt{5})}{3^2-(\sqrt{5})^2} = \frac{8\sqrt{5}(3-\sqrt{5})}{9-5} \\ &= 2\sqrt{5}(3-\sqrt{5}) = \sqrt{5} - \end{aligned}$$

$$\begin{aligned} \text{n. } \frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}} &= \frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}} \times \frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}-\sqrt{2}} = \frac{(\sqrt{3}-\sqrt{2})(\sqrt{3}-\sqrt{2})}{(\sqrt{3})^2-(\sqrt{2})^2} \\ &= \frac{\sqrt{3} \cdot \sqrt{3} - \sqrt{6} - \sqrt{6} + \sqrt{2} \cdot \sqrt{2}}{(\sqrt{3})^2-(\sqrt{2})^2} \\ &= \frac{-\sqrt{6} + \sqrt{6}}{1} = -\sqrt{6} \end{aligned}$$