Kunci Ujian Matematika SMP Tahap 3

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LV 1

1. $\dfrac{3^2 \cdot 4^{-2} \cdot 5}{2^{-4} \cdot 3^3 \cdot 25} = 3^{2-3} \cdot (2^2)^{-2} \cdot 2^4 \cdot \dfrac{1}{5} = 3^{-1} \cdot 2^{-4} \cdot 2^4 \cdot \dfrac{1}{5} = \dfrac{1}{3} \cdot 2^{-4+4} \cdot \dfrac{1}{5} = \dfrac{1}{3} \cdot \dfrac{1}{5} = \dfrac{1}{15}$
2. $3^{-1} - 3^{-3} = \dfrac{1}{3} - \dfrac{1}{27} = \dfrac{3-1}{27} = \dfrac{2}{27}$
3. $(\dfrac{1}{13})^0(\dfrac{2}{3})^6(\dfrac{4}{9})^{-3} = (1)(\dfrac{2^6}{3^6})(\dfrac{9^3}{4^3}) = \dfrac{2^6}{3^6} \cdot \dfrac{3^6}{2^6} = \dfrac{\cancel{2^6}^{\,1}}{\cancel{3^6}} : \dfrac{\cancel{3^6}^{\,1}}{\cancel{2^6}^{\,1}} = 1$
4. $(\dfrac{2}{3})^3 = \dfrac{8}{27}$
5. $\dfrac{3}{3^{-2}} = 3 \cdot 3^2 = 3^{1+2} = 3^3 = 27$

LV 2

1. $\dfrac{x^2b^2c^2}{xbc^{-1}} = x^{2-1}b^{2-1}c^{2-(-1)} = xbc^3$
2. $\dfrac{25u^{12}p^{24}q}{125up^{15}q^{16}} = \dfrac{1}{5}u^{12-1}p^{24-15} = \dfrac{1}{5}u^{11}p^9$
3. $(\sqrt{a^2})^2 \cdot \dfrac{1}{a^{-1}} = a^2 \cdot a = a^3$
4. $\sqrt{-a^2 - (-a)^2 + -a^2} = \sqrt{-a^2 - a^2 - a^2} = \sqrt{-3a^2} = a\sqrt{-3}$
5. $\dfrac{a^{-6}}{a^{-7}} = \dfrac{a^7}{a^6} = a^{7-6} = a$

LV 3

1. $\left(\dfrac{a^4b^{12}c^4}{a^{-10}b^{-5}c^{-4}}\right)^{-\frac{1}{2}} = (a^{4-(-10)}b^{12-(-5)}c^{4-(-4)})^{-\frac{1}{2}} = (a^{14}b^{17}c^8)^{-\frac{1}{2}} = a^{-7}b^{-\frac{17}{2}}c^{-4} = \dfrac{1}{a^7\sqrt{b^{17}}c^4}$
2. $\left(\dfrac{x^{-14}\sqrt[12]{x^4}x^8}{x^{-8}x^{-1/5}x^{-1/4}}\right)^{-\frac{1}{2}} = \left(x^{(-14+\frac{4}{12}+8)-(-8+(-\frac{1}{5})+(-\frac{1}{4}))}\right)^{\frac{1}{2}} x^{\frac{167}{60}\cdot\frac{1}{2}} = x^{\frac{167}{120}}$
3. $\left(\sqrt{a} \cdot \sqrt{a^4}\right)^{-2} = a^{(\frac{1}{2}+2)\cdot\frac{1}{2}} = a^{2\frac{1}{2}}$
4. $((a^2)^{16})^{17} = a^{544}$
5. $p^{1/2}p^0p^{1/4} = p^{\frac{1}{2}+0+\frac{1}{4}} = p^{\frac{3}{4}}$

LV 4

1. $\left(625z^{\frac{2}{8}}f^{\frac{1}{4}}\right)^{\frac{1}{2}} = 25z^{\frac{1}{8}}f^{\frac{1}{8}}$
2. $(\sqrt[14]{x^7})^7 = x^{\frac{7}{2}}$
3. $\sqrt{p}^{\sqrt{2}} \cdot \sqrt{p}^{3\sqrt{2}} = \sqrt{p}^{\sqrt{2}+3\sqrt{2}} = \sqrt{p}^{4\sqrt{2}}$
4. $\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\frac{1}{2}}}}}} = \frac{1}{2^{\frac{1}{5}}}$
5. $\frac{z^{\pi} \cdot z^{2\pi}}{z^{3\pi}} = z^{(\pi+2\pi-3\pi)} = z^0 = 1PENGUMU$