

Kunci Ujian Matematika SMP Tahap 3

H.O.W.K.E

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LV 1

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

LV 2

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

LV 3

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

LV 4

$$1. \left(625z^{\frac{2}{8}}f^{\frac{1}{4}}\right)^{\frac{1}{2}} = 25z^{\frac{1}{8}}f^{\frac{1}{8}}$$

$$2. \left({}^{14}\sqrt{x^7}\right)^7 = x^{\frac{7}{2}}$$

$$3. \sqrt{p}^{\sqrt{2}} \cdot \sqrt{p}^{3\sqrt{2}} = \sqrt{p}^{\sqrt{2}+3\sqrt{2}} = \sqrt{p}^{4\sqrt{2}}$$

$$4. \sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{\frac{1}{2}}}}}}} = \frac{1}{2^{\frac{1}{5}}}$$

$$5. \frac{z^{\pi} \cdot z^{2\pi}}{z^{3\pi}} = z^{(\pi+2\pi-3\pi)} = z^0 = 1$$