Name: KEY

ID: A

Algebra II (2yr) Review 7.1 -7.3

Simplify and do not use negative exponents

1. $(x^3y^6)(x^4y^8) = x^7y^{14}$

2. $(3x^4y^{-5}z^2)^2 = 9x^8y^{-10}z^4 = \frac{9x^8z^4}{y^{10}}$

3. $\frac{x^5y^4z^3}{xy^7z^3} = x^4y^{-3} = \frac{x^4}{y^3}$

4. $(xy)^0 = 1$

Find the real-number root.

5. $\sqrt{-2.89}$ DNE

6. $\sqrt{2.25} = 1.5$

7. $\sqrt[3]{-\frac{27}{64}} = \frac{-3}{4}$ $\frac{\sqrt[3]{-27}}{\sqrt[3]{64}}$

8. Find all the real fourth roots of $\sqrt[4]{\frac{625}{1296}}$. $\pm\frac{5}{6}$

9. Find all the real square roots of $-\frac{25}{36}$. DNE

Simplify the radical expression.

10. $\sqrt[4]{81x^{12}y^{24}}$ $3x^{3}y^{6}$

11. $\sqrt[2]{121g^{10}}$ $11g^{5}$

12. Simplify $\sqrt[3]{-27a^{10}b^{6}}$. $-3a^{3}b^{2}\sqrt[3]{a}$

13. **Multiply and simplify if possible.**
$\sqrt{20} \cdot \sqrt{2}$ $= \sqrt{40} = 2\sqrt{10}$

$\sqrt{20} \cdot \sqrt{2} = 2\sqrt{5} \cdot \sqrt{2}$
$2\sqrt{10}$

14. Multiply and simplify
$\sqrt[3]{9x^{4}} \cdot \sqrt[3]{3x^{7}}$.

Divide and simplify.

15. $\dfrac{\sqrt[3]{270}}{\sqrt[3]{5}}$ $= \sqrt[3]{54} = \sqrt[3]{3 \cdot 3 \cdot 3 \cdot 2}$ $3\sqrt[3]{2}$

16. **Divide and simplify if possible.**
$\dfrac{\sqrt{84x^{28}}}{\sqrt{7x^{2}}}$ $= \sqrt{12x^{26}} = \sqrt{2 \cdot 2 \cdot 3 \cdot x^{26}}$ $2x^{13}\sqrt{3}$

17. **Simplify by adding or subtracting, if possible.**
$2\sqrt{2a} - 5\sqrt{2a}$
$-3\sqrt{2a}$

18. **Simplify by adding or subtracting, if possible.**

$2\sqrt{8x} + 6\sqrt{2x}$

$2\sqrt{2 \cdot 2 \cdot 2 \cdot x} + 6\sqrt{2x}$ → $4\sqrt{2x} + 6\sqrt{2x} = 10\sqrt{2x}$

Add or subtract if possible.

19. $4\sqrt{3} - 3\sqrt{5}$ same

20. **Simplify by adding or subtracting, if possible.**

$-\sqrt{7} - 6\sqrt{16} - 4\sqrt{7}$

$-1\sqrt{7} - (6 \cdot 4) - 4\sqrt{7}$

$-5\sqrt{7} - 24$

21. **Multiply.** $(-7 - \sqrt{5})(-2 + \sqrt{5}) = 14 - 7\sqrt{5} + 2\sqrt{5} - 5$

$9 - 5\sqrt{5}$

22. **Multiply.**

$(-6 - \sqrt{2})^2$ $(-6 - \sqrt{2})(-6 - \sqrt{2}) = 36 + 6\sqrt{2} + 6\sqrt{2} + 2$

$38 + 12\sqrt{2}$

23. **Multiply.**

$(\sqrt{7} + \sqrt{2})(\sqrt{7} - \sqrt{2}) = 7 - \sqrt{14} + \sqrt{14} - 2 = 5$

conjugate

24. **Rationalize the denominator.**

$\left(\frac{\sqrt{3x^{11}y^{11}}}{\sqrt{7x^5y^6}}\right)\left(\frac{\sqrt{7x^5y^6}}{\sqrt{7x^5y^6}}\right) = \frac{\sqrt{21x^{16}y^{17}}}{7x^5y^6} = \frac{x^8y^8\sqrt{21y}}{7x^5y^6} = \frac{x^3y^2\sqrt{21y}}{7}$

or $\left(\frac{\sqrt{3x^6y^5}}{\sqrt{7}}\right)\left(\frac{\sqrt{7}}{\sqrt{7}}\right) = \frac{\sqrt{21x^6y^5}}{7} = \frac{x^3y^2\sqrt{21y}}{7}$

Rationalize the denominator of the expression. ~~Assume that all variables are positive.~~

25. $\left(\frac{\sqrt{2} - \sqrt{5}}{\sqrt{2} + \sqrt{5}}\right)\left(\frac{\sqrt{2} - \sqrt{5}}{\sqrt{2} - \sqrt{5}}\right) = \frac{2 - \sqrt{10} - \sqrt{10} + 5}{2 - \sqrt{10} + \sqrt{10} - 5} = \frac{7 - 2\sqrt{10}}{-3}$