Review - Radicals & Rational Exponents

Use a separate sheet of paper. No work/answers written on this paper will be graded. *** No Calculator section**

1. Find all the real square roots of $-\frac{4}{25}$.
2. Find the real-number root: $\sqrt[3]{-\frac{8}{125}}$
3. Simplify the radical expression: $\sqrt[4]{625x^{12}y^{16}}$
4. Multiply and simplify: $\sqrt{22} \cdot \sqrt{2}$
5. Simplify $\sqrt[3]{32a^{10}b^{9}}$.
6. Multiply and simplify $\sqrt[3]{7x^{7}} \cdot \sqrt[3]{9x^{4}}$.
7. Divide and simplify: $\frac{\sqrt[3]{108}}{\sqrt[3]{2}}$

#8 – 9. Divide and simplify. Assume that all variables are positive.

8. $\frac{\sqrt[3]{162x^{19}}}{\sqrt[3]{2x}}$
9. $\frac{\sqrt{120x^{18}}}{\sqrt{5x}}$

#10 – 12. Rationalize the denominator of the expression.

10. $\frac{\sqrt{6x^{12}y^{9}}}{\sqrt{5x^{6}y^{4}}}$
11. $\frac{\sqrt[3]{5}}{\sqrt[3]{7}}$
12. $\frac{5-\sqrt{3}}{4+\sqrt{3}}$

#13 – 14. Add if possible.

13. $6\sqrt{5x} + 3\sqrt{5x}$
14. $5\sqrt[4]{2x} + 5\sqrt[4]{7x}$
15. Joan's bedroom has a width $\sqrt{5}$ and length $5\sqrt{5}$. What is the perimeter of the bedroom in simplest radical form?

#16 – 19. Simplify.

16. $\sqrt{80} + \sqrt{50} - \sqrt{20}$

*17. $17^{\frac{1}{2}} \cdot 17^{\frac{1}{2}}$

*18. $10^{\frac{1}{3}} \cdot 100^{\frac{1}{3}}$

*19. $27^{\frac{2}{3}}$

#20 – 22. Multiply.

20. $\left(-4-\sqrt{2}\right)\left(-7+\sqrt{2}\right)$
21. $\left(-2+\sqrt{5}\right)^{2}$
22. $\left(\sqrt{7}+\sqrt{2}\right)\left(\sqrt{7}-\sqrt{2}\right)$
23. Write the exponential expression $(4x)^{\frac{4}{3}}$ in radical form.

*24. Write $\left(8a^{-9}\right)^{-\frac{2}{3}}$ in simplest form.

Solve the equation.

25. $\sqrt{x+5} - 3 = 6$
26. $(x+6)^{\frac{2}{5}} = 4$
27. $3(x-3)^{\frac{4}{3}} - 7 = 41$

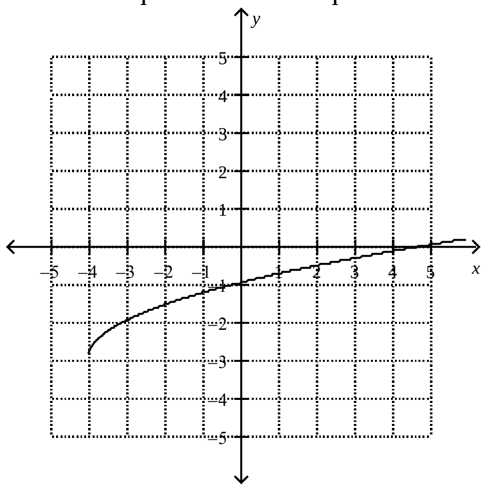
Solve. Check for extraneous solutions.

28. $2x = \sqrt{30 - 2x}$

29. $(7x - 2)^{\frac{1}{3}} = (6 - 4x)^{\frac{1}{3}}$

30. Simplify $\sqrt[4]{80d^{11}e^{6}}$.

*31. Write the equation for the square root function.



Graph the function. Make sure to have at least 3 points on your graph.

*32. $y = \sqrt{x - 1} + 4$

*33. $y = -\sqrt{x + 2} - 1$