Name: _____ **Class:** _____ **Date:** _____ **ID: A**

Algebra 2 - Unit 7 TEST Review - Radical Functions

Test Information:
*** Work must be shown on this test (when appropriate) in order to receive full credit.**
*** Circle your final answer, so that it can clearly be found.**

1. Find all the real square roots of 0.0025

2. Evaluate the expressions without using a calculator.

   a) $(-125)^{1/3}$ b) $36^{3/2}$ c) $8^{-4/3}$ d) $35^{2/3}$

3. Simplify $\left(25a^{10}b^{16}\right)^{1/2}$. Assume that all variables are positive.

4. Simplify $\sqrt[3]{135a^{10}b^{15}}$. Assume that all variables are positive.

5. Simplify $\sqrt[3]{-108a^{13}b^{12}}$. Assume that all variables are positive.

6. Perform the following operations with radical functions.

a) $\sqrt{10}\cdot\sqrt{2}$ b) $\sqrt[3]{6x^2}\cdot\sqrt[3]{4x^5}$ c) $5\sqrt{2x}+3\sqrt{2x}$

d) $\sqrt{500}-\sqrt{20}$ e) $\left(4-\sqrt{3}\right)\left(5+\sqrt{3}\right)$ f) $\left(4-\sqrt{7}\right)^2$

7. A garden has width $\sqrt{2}$ and length $4\sqrt{2}$. What is the perimeter of the garden in simplest radical form?

8. Write the exponential expression $3x^{\frac{3}{7}}$ in radical form.

9. Write the radical expression $\frac{8}{\sqrt[7]{x^{15}}}$ in exponential form.

10. Rationalize the denominator of the given expression: $\dfrac{\sqrt{3}-\sqrt{6}}{\sqrt{3}+\sqrt{6}}$

11. Rationalize the denominator.

$$\frac{\sqrt[3]{7}}{\sqrt[3]{2}}$$

12. Let $h(x)=4x^2-1$, $f(x)=3x^2$, and $g(x)=9x^3$. Perform the indicated operations.

a) $f(x)+g(x)$ b) $h(x)-f(x)$ c) $h(x)\cdot g(x)$ d) $\dfrac{g(x)}{f(x)}$

13. Let $h(x)=2x+1$, $f(x)=3x^2-x$, and $g(x)=2x^2$. Perform the indicated operations.

a) $h(g(5))$ b) $f(g(x))$ c) $h(h(x))$

14. Find the inverse of the function. Give your answers in the form $f^{-1}(x)$.

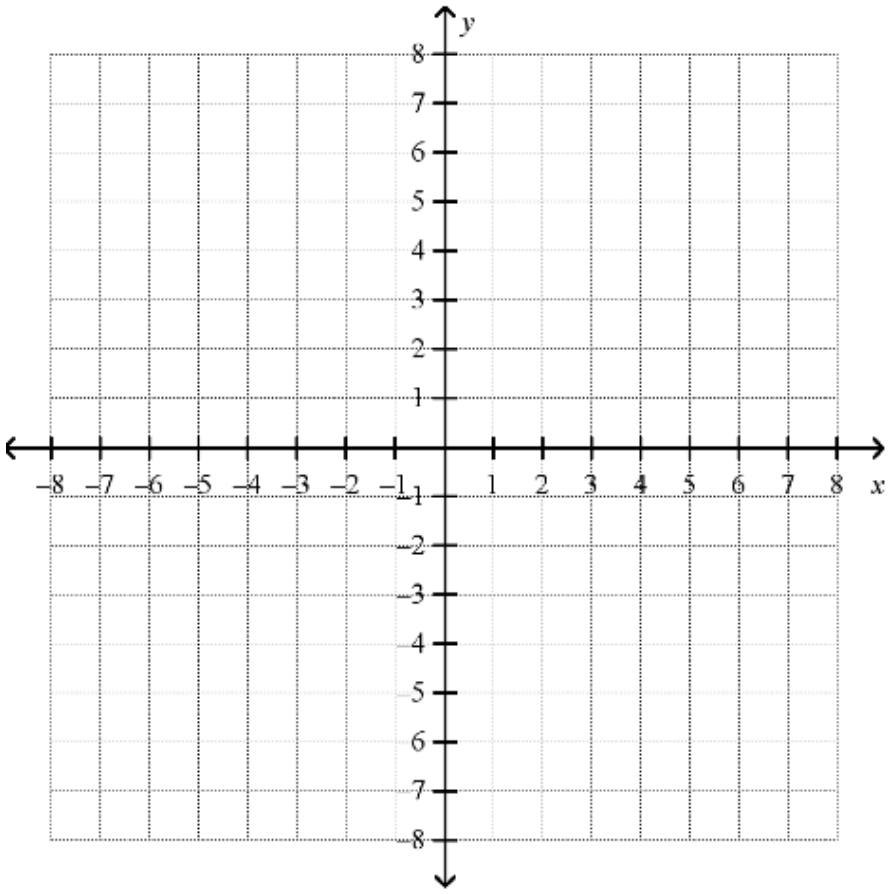
a) $y = 5x - 12$ b) $h(x) = \frac{1}{2}x^4, x \geq 0$ c) $f(x) - 2x^3 + 1$ d) $g(x) = \sqrt[3]{\frac{x+5}{4}}$

15. Solve the equation $\left(\sqrt{x+7}\right) - 10 = -6$

16. Solve the equation $(-10x + 7)^{\frac{1}{5}} = (9 - 6x)^{\frac{1}{5}}$

17. Solve the equation $(8x)^{3/5} = 8$.

18. Graph the given function: $y = \sqrt{x} - 2$



19. Rewrite $y = \sqrt{16x + 32} + 3$ to make it easy to graph using a translation. Then, describe the transformation of the parent function.

20. Describe the transformations of the parent function $y = 0.5\sqrt{x}$ for the given function:
$y = -0.5\sqrt{x + 3} + 2$