Name _____

5 Topic Review

For Items 1–2, find the value of each expression.

1. $\sqrt{3^6}$

2. $\sqrt[3]{-125}$

3. Simplify

a. $\sqrt[4]{16x^4y^8}$

4. Multiply $(\sqrt{b}+3)(\sqrt{b}-3)$

5. Which of the following is equivalent to $\frac{4}{1+\sqrt{7}}$

A $\frac{2\sqrt{7}+2}{3}$

B $\frac{2\sqrt{7}+2}{-3}$

C $\frac{2\sqrt{7}-2}{-3}$

D $\frac{2\sqrt{7}-2}{3}$

6. The graph of $y=\sqrt{x}$ has been translated to the left 2 units and up 1 unit. What is the equation of the translated graph?

A $y=1+\sqrt{x+2}$

B $y=1+\sqrt{x-2}$

C $y=-1+\sqrt{x-2}$

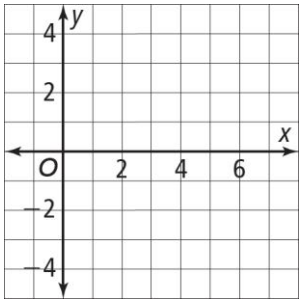
D $y=-1-\sqrt{x+2}$

7. The function *a* has domain $x \geq -2$ and range $y \leq 1$. What are the domain and range of a^{-1}?

Domain:

Range:

8. Graph the function $f(x)=\sqrt{x}-1$



9. Which of the following are real numbers? Select all that apply.

A $\sqrt{115}$

B $\sqrt{0}$

C $\sqrt[4]{-16}$

D $\sqrt[3]{-8}$

10. The volume of a cube is 2.8 m^3. Find the length of its edge to the nearest tenth of a meter.

11. Multiply $\sqrt{3}(\sqrt{3}+\sqrt{27})$

HINT: Use a calculator

12. Which of the following is a decreasing function?

A $f(x)=\sqrt{x^2}$

B $f(x)=-\sqrt{2-x}$

C $f(x)=2-\sqrt{x}$

D $f(x)=\sqrt[3]{x}$

13. Let $f(x) = \sqrt{x}$ and $g(x) = 7 - x$ What is the domain of $f \circ g$?

A x > 7 **C** x ≥ 7
B x < 7 **D** x ≤ 7

14. If $a(x) = 3 - 9x$ what is an equation for $a^{-1}(x)$?

A $a^{-1} = \frac{x-3}{9}$
B $a^{-1} = \frac{x-3}{-9} = \frac{3-x}{9}$
C $a^{-1} = \frac{3-x}{-9} = \frac{x-3}{9}$
D $a^{-1} = \frac{x+3}{9}$

15. Evaluate the expression $\sqrt{x^2 - 5x + 22}$ when $x = -2$

16. Some values of $f(x)$ are given in the table. Find the value of $f^{-1}(3)$.

x	2	3	-3
$f(x)$	3	1	5

17. A cylindrical pipe is 25 ft long and has a volume of 900 ft^3. Find its approximate diameter to the nearest hundredth of a foot. V = Bh

A 3.39 ft **C** 6.77 ft
B 6 ft **D** 12 ft

18. Solve $(x-3)^{\frac{2}{5}} = (x-1)^{\frac{1}{5}}$

$x =$ ☐

19. $\sqrt{x} + \sqrt{x+5} = 5$

20. A store increases all its prices by 20% and then offers a $50 discount on all purchase prices. Let x represent the price in dollars. Let $f(x) = 1.20x$ represent the increase and $g(x) = x - 50$ represent the discount. Which function can the store manager use to find the final purchase prices?

A $f + g$ **C** $g \circ f$
B $f \times g$ **D** $\frac{f}{g}$

21. Solve $\sqrt{x+1} + \sqrt{x-1} = 2$.

A 0 **C** 1.25
B 1 **D** 2

22. The volume of a sphere is $V(r) = \frac{4}{3}\pi r^3$ and the radius is increasing at 5 mm per second. The function $r(t) = 5t$ gives the radius at time t seconds. Which function gives the volume at time t?

A $V \circ r$
B $r \circ V$
C $(r + V)(t)$
D $(V \cdot r)(t)$

23. Solve the equation $\sqrt{x^2} = x$

All values of x | ☐