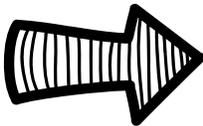
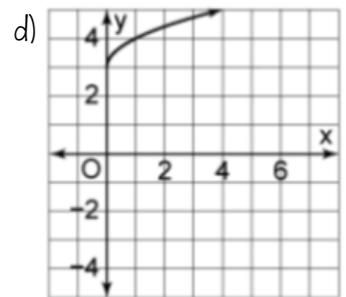
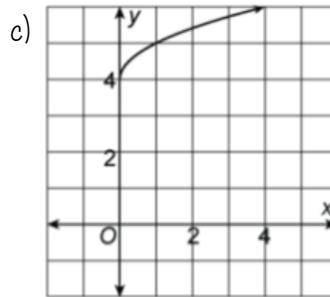
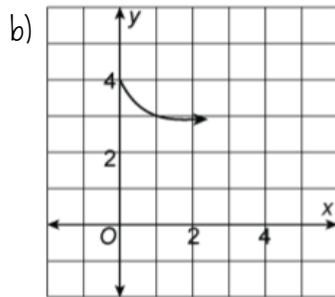
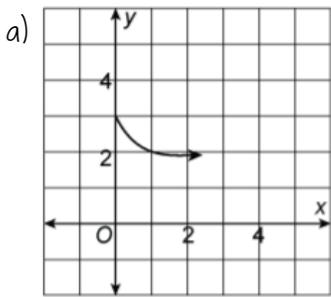


# Algebra 2 DISTRICT COMMON ASSESSMENT 3

Directions: Show all work on this paper. When completed, transfer your answers online.

<p>1. Find the value of the expression.</p> $\sqrt{54} = \underline{\hspace{2cm}}$	<p>2. Find the value of the expression.</p> $\sqrt[5]{-243} = \underline{\hspace{2cm}}$										
<p>3. What is the simplified form of <math>\sqrt[3]{27x^9y^3}</math>?</p> <p>a) <math>9x^3y</math>            b) <math>3x^3</math>            c) <math>3x^3y</math>            d) <math>9x^3</math></p>	<p>4. Multiply <math>(\sqrt{a} - 2)(\sqrt{a} + 2)</math>.</p> <p>a) <math>a - 2</math>            b) <math>a^2 - 2</math>            c) <math>a - 4</math>            d) <math>a^2 - 4</math></p>										
<p>5. Which of the following is equivalent to <math>\frac{2}{1 + \sqrt{5}}</math>?</p> <p>a) <math>\frac{1 + \sqrt{5}}{2}</math>            b) <math>\frac{1 - \sqrt{5}}{2}</math>            c) <math>\frac{\sqrt{5} - 1}{2}</math>            d) <math>\sqrt{5} - 2</math></p>	<p>6. The graph of <math>y = \sqrt{x}</math> has been translated to the right 3 units and down 9 units. What is the equation of the translated graph?</p> <p>a) <math>y = 3 + \sqrt{x + 9}</math>            b) <math>y = 9 - \sqrt{x + 3}</math>            c) <math>y = 3 - \sqrt{9 - x}</math>            d) <math>y = -9 + \sqrt{x - 3}</math></p>										
<p>7. The function <math>a</math> has domain <math>x \geq 2</math> and range <math>y \leq -1</math>. Complete this sentence:</p> <p>The domain of <math>a^{-1}</math> is _____ and the range is _____.</p> <table style="width: 100%; border: none;"> <tr> <td style="text-align: center; border: 1px solid black; background-color: #007bff; color: white; padding: 2px;">Choose...</td> <td style="text-align: center; border: 1px solid black; background-color: #007bff; color: white; padding: 2px;">Choose...</td> </tr> <tr> <td style="text-align: center; padding: 2px;"><math>x \geq 2</math></td> <td style="text-align: center; padding: 2px;"><math>y &gt; 2</math></td> </tr> <tr> <td style="text-align: center; padding: 2px;"><math>x \leq 2</math></td> <td style="text-align: center; padding: 2px;"><math>y \leq -1</math></td> </tr> <tr> <td style="text-align: center; padding: 2px;"><math>x \geq -1</math></td> <td style="text-align: center; padding: 2px;"><math>y \geq 2</math></td> </tr> <tr> <td style="text-align: center; padding: 2px;"><math>x \leq -1</math></td> <td style="text-align: center; padding: 2px;"><math>y &gt; -1</math></td> </tr> </table>	Choose...	Choose...	$x \geq 2$	$y > 2$	$x \leq 2$	$y \leq -1$	$x \geq -1$	$y \geq 2$	$x \leq -1$	$y > -1$	<p style="text-align: center; font-size: 1.2em;">Go on to the next page.</p> <div style="text-align: center; margin-top: 20px;">  </div>
Choose...	Choose...										
$x \geq 2$	$y > 2$										
$x \leq 2$	$y \leq -1$										
$x \geq -1$	$y \geq 2$										
$x \leq -1$	$y > -1$										

8. Which graph shows the function  $f(x) = 3 + \sqrt{x}$ ?



9. Which of the following are real numbers? **Select all (three) that apply.**

- a)  $\sqrt{12}$
- b)  $\sqrt{0}$
- c)  $\sqrt[3]{-1}$
- d)  $\sqrt[4]{-1}$

10. The volume of a cube is  $1.5\text{m}^3$ . Find the length of its edge to the nearest tenth of a meter.

Edge length = \_\_\_\_\_ m

11. Multiply:  $\sqrt{2}(2\sqrt{0.125} + \sqrt{18})$  (Hint: Use calculator.)

Product = \_\_\_\_\_

12. Which of the following is an increasing function?

- a)  $f(x) = \sqrt{x^2}$
- b)  $f(x) = \frac{1}{x^2}$
- c)  $f(x) = 1 - \sqrt{x}$
- d)  $f(x) = 1 + \sqrt{x}$

13. Let  $f(x) = \sqrt{x}$  and  $g(x) = 3 - x$ . What is the domain of  $f \circ g$ ?

- a)  $x > 3$
- b)  $x < 3$
- c)  $x \geq 3$
- d)  $x \leq 3$

14. If  $a(x) = 2 - 8x$ , what is an equation for  $a^{-1}(x)$ ?

- a)  $a^{-1} = \frac{x-2}{8}$
- b)  $a^{-1} = \frac{2-x}{8}$
- c)  $a^{-1} = \frac{x-8}{2}$
- d)  $a^{-1} = x - 4$

15. Evaluate the expression  $\sqrt{x^2 + 2x + 1}$  when  $x = -5$ .

- a) -4
- b) 4
- c)  $\sqrt{6}$
- d) 6

16. Some values of  $f(x)$  are given in the table. Find the value of  $f^{-1}(6)$ .

x	-6	6	10
f(x)	-6	3	6

$f^{-1}(6) = \underline{\hspace{2cm}}$

17. A cylindrical pipe is 9 ft. long and has a volume of  $100 \text{ ft}^3$ . Find the approximate diameter to the **nearest hundredth** of a foot.  $V=Bh$

- a) 1.88 ft
- b) 2.23 ft
- c) 3.33 ft
- d) 3.76 ft

Radius = \_\_\_\_\_ Diameter = \_\_\_\_\_

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

x = \_\_\_\_\_

19. What is the value of x in  $\sqrt{x} + \sqrt{x + 2} = 2$ ?

- a)  $\frac{1}{4}$
- b)  $\frac{1}{2}$
- c) 2
- d) 4

20. A store offers a \$30-off sale on bicycles and a 10% discount on the purchase price. Let x represent the price in dollars, and let  $f(x) = x - 30$  and  $g(x) = x - 0.10x - 0.90x$  represents the discounts. Which function can the store manager use to find the final price?

- a)  $f + g$
- b)  $f \cdot g$
- c)  $\frac{f}{g}$
- d)  $f \circ g$

21. Solve  $\sqrt{6 + 2x} = 1 + \sqrt{x + 4}$

- a) -1
- b) 0
- c) 2
- d) 5

22. The volume of a sphere is  $V(r) = \frac{4}{3}\pi r^3$  and the radius is increasing 2 mm per second. The function  $r(t) = 2t$  gives the radius at time t seconds. Which function gives the volume at time t?

- a)  $(V \circ r)(t)$
- b)  $(r \circ V)(t)$
- c)  $(r + V)(t)$
- d)  $(V \cdot r)(t)$

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

- a) All values of x
- b) All values of x |  $x \geq 1$
- c) All values of x |  $x \geq 0$
- d) All values of x |  $x \leq 0$