

Name: _____

Date: _____

CUBE ROOTS
COMMON CORE ALGEBRA I HOMEWORK

FLUENCY

1. Find each of the following cube roots without the use of your calculator. Justify your answer based on a multiplication statement.

(a) $\sqrt[3]{8}$

(b) $\sqrt[3]{-1}$

(c) $\sqrt[3]{125}$

(d) $\sqrt[3]{0}$

(e) $\sqrt[3]{-8}$

(f) $\sqrt[3]{27}$

(g) $\sqrt[3]{\frac{1}{64}}$

(h) $\sqrt[3]{-\frac{1}{1000}}$

2. Use your calculator to find the following cube roots by trial and error. Justify your answers using a multiplication statement.

(a) $\sqrt[3]{512}$

(b) $\sqrt[3]{-2197}$

(c) $\sqrt[3]{9261}$

(d) $\sqrt[3]{-15,625}$

3. The cube root function is the inverse of the cubing (x^3) function. Just as we can solve certain quadratic equations by using square roots, we can solve certain cubic equations by using cube roots. Solve each of the following in the form required. Use your calculator on (b) to find the cube root.

(a) $2x^3 - 1 = 53$ (Solve exactly)

(b) $\frac{x^3}{8} - 3 = 7$ (Solve to nearest tenth)

4. If $g(x) = 5\sqrt[3]{x+7} - 4$, then which of the following is the value of $g(57)$?

(1) 19

(3) 16

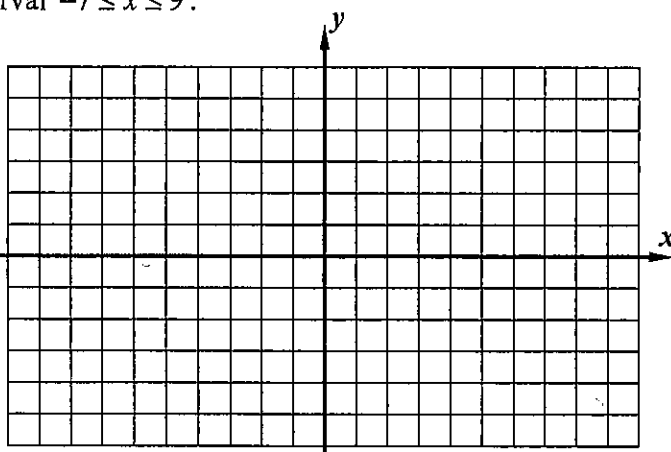
(2) 11

(4) 25



5. Consider the function $f(x) = \sqrt[3]{x-1} + 2$ over the interval $-7 \leq x \leq 9$.

(a) Graph $f(x)$ over this domain interval only.



(b) State the range of the function over this interval.

(c) Recall that the average rate of change over the interval $a \leq x \leq b$ is calculated by $\frac{f(b)-f(a)}{b-a}$. Find the average rate of change of $f(x)$ over the intervals below:

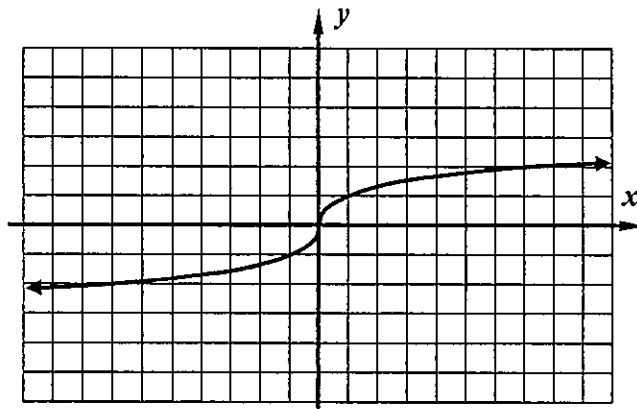
(i) $2 \leq x \leq 9$

(ii) $0 \leq x \leq 1$

(iii) $-7 \leq x \leq 9$

6. The graph of $y = \sqrt[3]{x}$ is shown below. On the same set of axes, graph $f(x) = -2\sqrt[3]{x}$. Fill out the table below to help with your graph. What happened to the graph of $y = \sqrt[3]{x}$ when multiplied by -2 ?

x	-8	-1	0	1	8
$f(x) = -2\sqrt[3]{x}$					



REASONING

6. Explain why it is not possible to find the square root of a negative number but it is possible to find the cube root of a negative number. Give examples to support your explanation.

