

DO NOT TURN THIS PAGE UNTIL YOU ARE INSTRUCTED TO DO SO

- ❖ Write your name below on the space provided.
- ❖ This test has a total of $2\sqrt[3]{8} + 1$ pages.
- ❖ Work the problem in the space provided. If you need more space, write on the back of the test.
- ❖ To insure maximum credit, show your work. In general, full credit will not be given for unsupported answers.
- ❖ Look only at your test. Don't give me the impression that you are cheating.
- ❖ Draw a flower on this page for something extra.
- ❖ Be sure to write neatly and in pencil. If I cannot read what was written, do not expect the problem to be graded.
- ❖ If you finish early, go over the test again.

Good luck!

Number	Maximum	Score
1	8	
2	6	
3	12	
4	4	
5	6	
6	20	
7	12	
8	2	
9	9	
10	12	
11	6	
12	2	
13	EC 10	
Total	100	

Name _____

Circle Final Answers

Assume variables represent nonnegative numbers
unless otherwise stated

4) (2 points each) For the function $f(x) = \sqrt{8x+7}$, find the following or say why they don't exist in the real number system.

a) $f(3)$

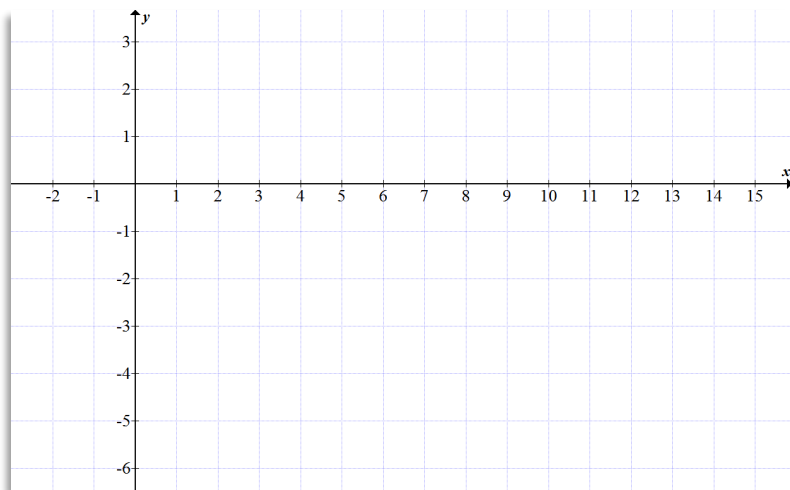
b) $f(-1)$

5) (3 points each) For the function $f(x) = \sqrt{x+2} - 4 \dots$

a) Explain how to find the domain algebraically and then state the domain:

b) Fill in the chart below and sketch a graph of the function f :

x	$f(x)$
-2	
-1	
2	
7	
14	



6) (4 points each) Simplify. Write answers using positive exponents. **Assume the variables in only part a can be negative:**

a) $(256x^{12}y^8)^{\frac{1}{4}}$

b) $\left(-\frac{216x^6y^{12}}{z^{18}}\right)^{-\frac{4}{3}}$

c) $\sqrt[4]{8} \cdot \sqrt[4]{4}$

d) $\sqrt[3]{x^2yz^2} \times \sqrt[3]{x^2y^2z}$

e) $\frac{\sqrt[3]{18x^4y^8}}{\sqrt[3]{2x^3y^2}}$

7) (4 points each) Perform the indicated operation:

a) $5\sqrt[3]{10} + 8\sqrt[3]{10} - 6\sqrt[3]{3}$

b) $\sqrt[3]{192} - 2\sqrt[3]{24}$

c) $(\sqrt{5} + \sqrt{xy})^2$

8) (2 points) Explain why you can cancel the radical and the exponents in $\sqrt[9]{x^9y^9}$ but you cannot cancel the radical and the exponents in $\sqrt[9]{x^9 - y^9}$:

9) (3 points each) Rationalize the denominator. Simplify as needed:

a) $\frac{5}{\sqrt[3]{2}}$

b) $\frac{1}{\sqrt{64x^5}}$

c) $\frac{1+\sqrt{3}}{2+\sqrt{2}}$

10) (4 points each) Solve the equation for the variable:

a) $\sqrt{12x-3} + 1 = 4x$

b) $\sqrt{x+5} - \sqrt{x} = 2$

c) $2(x+1)^{\frac{1}{3}} = 8$

11) (2 points each) Simplify the following in terms of i as needed:

a) $\sqrt{-25}$

b) $-\sqrt{49}$

c) $-\sqrt{-36}$

12) (2 points) How is $\sqrt[6]{x+5}$ pronounced? _____

13) (1 point each) Extra Credit. Fill in the blank:

a) $a^{-n} =$ _____

b) $a^0 =$ _____

c) $a^{m+n} =$ _____

d) $a^{m-n} =$ _____

e) $(a^m)^n =$ _____

f) $(ab)^m =$ _____

g) $\frac{a^n}{b^n} =$ _____

h) $(\sqrt[n]{a})^m =$ _____

i) $a^{\frac{1}{n}} =$ _____

j) $\frac{1}{a^{\frac{m}{n}}} =$ _____