

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 $\frac{\sqrt{144}}{3} + 1$ 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.
- ❖ Be sure to write neatly 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	5	
2	5	
3	8	
4	9	
5	4	
6	4	
7	20	
8	16	
9	16	
10	8	
11	4	
12	1	
Total	100	

Name _____

Circle Final Answers

Assume variables represent nonnegative numbers unless otherwise stated.

1) (5 points) Solve the following system using elimination:

$$\begin{cases} 2x + 3y + 2z = -10 \\ x + y - 4z = -5 \\ x - 4y + 2z = 23 \end{cases}$$

2) (5 points) Solve the following system using elimination. If you are in a special case, say which case you are in and explain how you know:

$$\begin{cases} x + 2y + 2z = 4 \\ x - 3y + z = 5 \\ 2x - y + 3z = 10 \end{cases}$$

3) (3 points part *a*, 5 points part *b*) Consider the following problem.



Mike has yet to decide on a new hairstyle while playing the games.

Unable to miss a great deal, Mike goes wild during a video game sale at several stores. At Target, Mike buys 3 copies of *Final Fantasy XV*, 4 copies of *Uncharted 4*, and 2 copies of *Detroit* and spends \$120.38. At Best Buy, Mike buys 2 copies of *Final Fantasy XV*, 3 copies of *Uncharted 4* and one copy of *Detroit* for \$98.75. The price for one copy of *Final Fantasy XV* is \$10 more than twice the cost of *Detroit*. Assume the prices for each game does not change depending on where the game was purchased. How much does each game cost?

a) Name and define variables:

b) Set up the system but **do not solve it**.

4) (3 points each) Simplify completely.

a) $\sqrt{25}$ (You're welcome)

b) $\sqrt{x^2 + 4x + 4}$

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

5) (2 points each) For the function $f(x) = \sqrt{4x-7}$, find the following or say why they don't exist.

Write answers as an ordered pair:

a) $f(2)$

b) $f\left(-\frac{1}{2}\right)$

6) (2 points each) For the function $f(x) = \sqrt{x-2} + 3 \dots$

a) Explain the steps necessary to find the domain algebraically:

b) Find the domain and write the answer in interval notation:

7) (4 points each) Simplify. Write answers using positive exponents. **For part a only**, assume variables can represent any real number:

a) $(25x^2y^8)^{\frac{1}{2}}$

b) $\left(-\frac{125x^3y^9}{z^3}\right)^{-\frac{2}{3}}$

c) $\sqrt[3]{25} \cdot \sqrt[3]{25}$

d) $\sqrt[4]{x^2y^3z} \cdot \sqrt[4]{x^3yz}$

e) $\frac{\sqrt{27x^3y^5}}{\sqrt{9x^2y^3}}$

8) (4 points each) Perform the indicated operation:

a) $9\sqrt{3} + 11\sqrt{3}$

b) $\sqrt{72} - \sqrt{32}$

c) $(2 + \sqrt{3})(1 - \sqrt{5})$

d) $(\sqrt{3x} - \sqrt{y})^2$

9) (4 points each) Rationalize the denominator. Simplify as needed:

a) $\frac{4}{\sqrt{2}}$

b) $\frac{3}{\sqrt{25x^3}}$

c) $\frac{8x^2}{\sqrt[5]{2x^4}}$

d) $\frac{5}{2+\sqrt{7}}$

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

a) $\sqrt{x+12} - \sqrt{x} = -6$

b) $(x-3)^{\frac{1}{2}} + 16 = 32$

11) (2 points each) What must be true in order to...

a) Add two radical expressions?

b) Multiply two radical expressions?

12) (1 point) How is this pronounced? $\sqrt[3]{x^4+5}$ _____