INTERMEDIATE DIVISION

*Category 3: Radicals

*CALCULATORS ARE NOT PERMITTED IN THIS CATEGORY

1. (2pts) Simplify: $\sqrt[4]{x^2} \cdot x^{\frac{1}{2}} \cdot x$

1.

2. (3pts) Simplify: $(2\sqrt{5} + \sqrt{7})(5\sqrt{5} - \sqrt{7})$

2.

3. (5pts) Simplify completely.

3.

 $\frac{\frac{1}{\sqrt{6}} - \frac{1}{\sqrt{2}}}{2\sqrt{7}}$

INTERMEDIATE DIVISION

*Category 3: Radicals

*CALCULATORS ARE NOT PERMITTED IN THIS CATEGORY

1. (2pts) Simplify:

Simplify:
$$(\sqrt{2} + \sqrt{3})^2 + \sqrt{9} + \sqrt{5}$$

1.

2. (3pts) Rationalize this fraction

$$\sqrt[3]{\frac{8}{25}}$$

2. _____

3. (5pts) Simplify completely.

$$\frac{\frac{1}{\sqrt{2}} + \frac{1}{\sqrt{3}}}{\sqrt{5}}$$

3,

Name	

School		

Intermediate Division

Category 3

Radicals

NO CALCULATORS ALLOWED

1. (2pts) Simplify. $\sqrt[3]{54x^8y^7}$

ANS

2. (3pts) Rationalize this little beauty.

$$\frac{\sqrt{8}}{\sqrt{a-b}}$$
 where a-b \neq 0.

ANS

3. (5pts) Rationalize this big beauty.

$$\frac{1}{\sqrt{2} + \sqrt{3}} + \frac{1}{\sqrt{3} + \sqrt{4}} + \frac{1}{\sqrt{4} + \sqrt{5}}$$

ANS

Category 3. Radicals

CALCULATORS ARE NOT PERMITTED IN THIS CATEGORY

1. (2 Pts.) Simplify.
$$\left(\sqrt{3} + \sqrt{3}\right)^2 + \sqrt{4} + \sqrt{5}$$

ANS.

2. (3 Pts.) Write as 1 rationalized fraction.

3. (5 Pts.) Simplify.

Category 3. Radicals

CALCULATORS ARE NOT PERMITTED IN THIS CATEGORY

1. (2 Pts.) Simplify.

ANS.

2. (3 Pts.) Solve for x.

$$\sqrt{(\chi+a)^2}=5$$

3. (5 Pts.) Prove that Show each step. Be neat.

$$\frac{4\pm\sqrt{3}}{6}=\frac{2\pm\sqrt{3}}{3}$$

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Category 3. Radicals

CALCULATORS ARE NOT PERMITTED IN THIS CATEGORY

1. (2.Pts.) Simplify.
$$(\chi + \lambda)^{3b} (\chi + \lambda)^{-3b}$$

ANS. _____

2. (3 Pts.) Rationalize this fraction.

$$\frac{-\sqrt{x}}{\sqrt{x} + \sqrt{2x-1}}$$

ANS. _____

3. (5 Pts.) Simplify by reducing to a form involving a single radical.

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Category 3. Radicals

CALCULATORS MAY NOT BE USED IN THIS CATEGORY

1 (2 Pts.) Simplify.

$$\sqrt{x} \cdot \chi^{\frac{1}{2}} \cdot \sqrt{\chi^{2}}$$
 for $\chi \ge 0$

__ School

ANS.

2 (3 Pts.) Simplify.

$$3\sqrt{24} + 2\sqrt{54} =$$

ANS.

3. (3 Pts.) Simplify.

ANS. ___

ANS.

ANS.

where a and b are any real numbers

Category 3. Radicals

CALCULATORS MAY NOT BE USED IN THIS CATEGORY

1. (2 Pts.)

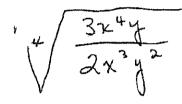
Va+bj

where a and b can be any real numbers.

ANS. |a+b|

2. (3 Pts.) Simplify.

Be sure to rationalize the denominator. x and y are $\neq 0$.



ANS. $\frac{1}{2}$ $\frac{3}{2}$ $\frac{9}{2}$ $\frac{2}{3}$ $\frac{3}{4}$ $\frac{9}{2}$

3. (5 Pts.) Simplify.

$$\frac{(3-\sqrt{7})(11+4\sqrt{7})}{5+\sqrt{7}}$$

ANS. _____

Category 3 Radicals

CALCULATORS MAY NOT BE USED IN THIS CATEGORY

1. (2.Pts.) Simplify
$$\sqrt{2} + \sqrt{4} + \sqrt{6} + \sqrt{8} + \sqrt{10} + \sqrt{12} + \sqrt{16} =$$

ANS.

2. (3 Pts.) Solve for x.
$$\sqrt{5\chi+1}$$
 - $2 = \sqrt{\chi+1}$

ANS.

3. (5 Pts.) Rationalize, simplify, make this look reasonable.

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Category 3. Radicals

1. (2 Pts.) Which of the following cannot be simplified?

___ A. \(\sqrt{289}\)

____ C. $\sqrt{\frac{289}{17}}$

D. V 289+17

___E. √289-17

2. (3 Pts.) Simplify. (A decimal answer will not be accepted.)

V2+14+V8+V16+V32+V64+V128 =

ANS.

3. (5 Pts.) Simplify. (A decimal answer will not be accepted.)

 $A.\left(\sqrt{2}+2\sqrt{2}\right)^2=$

 $B. \left(2\sqrt{3} + 3\sqrt{2}\right)^2 =$

ANS: (A) _____

(B) _____

Category 3. Radicals

1. (2 Pts.) Simplify. $(\sqrt{3}+2)(\sqrt{3}-2)$

ANS

2. (3 Pts.) Simpilfy each of the following:

d)
$$\sqrt[3]{-16} \times \sqrt[5]{3} \times 6^{1} =$$

3. (5 Pts.) Find A and B.

A = ... ANS. <u>B=</u> Name

____ No. School ____

I-N-T-E-R-M-E-D-I-A-T-E D-I-V-I-S-I-O-N

Category 3. Radicals

1 (2 Pts.) Simplify.

$$\sqrt{12} \quad \sqrt{15} \quad \sqrt{45} =$$

ANS. _____

2 (3 Pts.)
$$(\sqrt{2} + 2)^{-2}$$

ANS. _____

3. (5 Pts.) Solve for x.
$$\sqrt{x^2 + x} = 6$$

Category 3. Radicals

Rationalize all denominators.

1. (2 Pts.)

$$\frac{\sqrt[3]{a^2}}{\sqrt[3]{a}}$$

ANS.

2. (3 Pts.)

$$\frac{\sqrt{a}}{\sqrt{a+b}}$$

ANS.

3. (5 Pts.)

$$\frac{\sqrt{a} + \sqrt{b}}{\sqrt{a} - \sqrt{b}}$$

Name

No. School

I-N-T-E-R-M-E-D-I-A-T-E D-I-V-I-S-I-O-N

Category 2. Radicals

(Be sure to rationalize all denominators.)

1. (2 Pts.) Simplify and rationalize. $\frac{1+\sqrt{3}x}{1-\sqrt{3}x}$ ANS.

2. (3 Pts.) Simplify. $\sqrt{3}(\sqrt{72}-10\sqrt{\frac{1}{2}}+\frac{1}{3}\sqrt{162})$ ANS.

3. (5 Pts.) Solve for x.

ANS.

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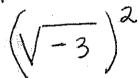
Category 3. Radicals

(2 Pts.) Simplify.

V(-3)2

ANS.

2. (3 Pts.) Simplify.



ANS.

2. (5 Pts.) Solve for x when x is any real.



ANS, _____

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Category	3. Pa	dicals	3. ,	
(Leave answers in #) and #2	in simp)est	radical rorm.;	
1. (2 Pts.) VQ V3 V4 V5 V6	JT =			
			ANS.	<u> </u>
2. (3 Pts.) \(\int + \sum \vec{1} + \sum \vec{1} + \sum \vec{1} \vec{1} + \sum \vec{1}	2+ V64 7	- V 128	+√256 =	
			ANS.	
5. (5 Pts.) Find x correct		e near	rest thousandth.	
$\sqrt{\chi} + \sqrt{2\chi} = 0$	5			
			ANS.	

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I-N-T-F-R-M-R-D-I-A-T-E D-I-V-I-S-I-0-N

Category 3. Irrational Numbers & Radicals

1. (2 Pts.)

ANS.

2. (3 Pts.)

ANS.

3. (5 Pts.) (2+1/3) = .2+V.6

ANS.

Radicals

- 1. Solve: 2 V4x-3 = V6x +38
- 2. Solve: 37 = 16
- 3. Multiply & simplify (answer with one radical)

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	1-14	-1-E-E-H-H-E-E-H	-A-T-E D	N-0-1-2-1-V-1-	
		Categor	v 1. Radi	icals	
Leav	E WELLP E	in madical fo	nm where	appropriate.	
1.	(Z Fts.)	Rationalize t	he denomi	nator	
		$\frac{3}{\sqrt{5}}$		AN5.	
erm #	(3 Hts.:	51mp11+4 VII + VI21 + VI	331 + 11	4641 = ANS.	.,
З.	(S Pts.)			arest whole number. in this category.)	
a)	ύ ζ χζ2 Β)	•	00t>x>0	d) 100 <x<1000 ä, ₽,</x<1000 	
				ANS	
Name		No.			_
	I-N-T-E	E-R-M-E-D-I-A-	T-E D-I-	V-I-S-I-O-N	
		Category 2.			
1. (2)	Pts.) 2 rat	$\pm V_3$ is lonal numbers	? (Expres	ted by what two as answer correct to andths.)	
				ANS.	_
2. (3]	Pts.) \/3	+ 19 + 127 -	+ 181 +	V243 + V729	
				irrational number?	
				ANS.	
3. (5]	Pts.) Sim	nplify.			
	,	X Xª-X	for X	70 ANS	

No. ____ School

Name _

Category 3 Radicals

Name

2 points

Simplify:

7.44.4<u>7</u>

3 points Simplify:

b.
$$\sqrt{\chi^4}$$

a. 1

5 points Solve for x.

$$\sqrt{x-3} + \sqrt{x+3} = 3$$

Radicals

2 po ints

Write the expression symbolically.

a. The square root of x.

a. ____

b. The cube root of x.

- b. ____
- c. The square of the cube root of x.
- c. ____
- d. The square root of the cube of x.
- d. _____

3 po ints

a. Give the radical form of $(2n)^{\frac{2}{3}}$

- a, ____
- b. Give the exponential form of $\sqrt{x^2 + y^2}$
- b. _____
- c. Simplify (assume all variables are positive): $\sqrt{8x^4y^6z^9}$

5 po ints

$$\sqrt{x-2} + \sqrt{x+3} = 3$$
Solve for x.

- 1. Express in Simplest radical form

 a. 2 Jas b. 3 Jao e. + 148 d. + Jacz
 - 2 Divide a Simplify rationalizing denominators a. 180 D. 16/125-4/5 c. 2/12
 - 3. Pationalize denominators

 a. $\frac{1}{\sqrt{3}}$ b. $\frac{72}{\sqrt{3}}$ c. $\frac{3+\sqrt{2}}{\sqrt{2}+\sqrt{3}}$
 - 4. Solve: 5x2+2x+1=0

Radicals

1. Which are irrational numbers?

2. True or False

c)
$$\sqrt[4]{\sqrt[4]{x}} = x^{4^{-2}}$$

e)
$$\sqrt[4]{\sqrt[3]{\times}} = \sqrt[12]{\times}$$