Math 1010 Sections 2 & 5 Homework

Do as much as possible without a calculator, unless otherwise stated. Do the homework in the order listed please. Be sure to show your work.

Hw 7.1:

A. Evaluate the first 15 perfect squares, i.e. write 1^2, 2^2, 3^2, … 15^2. Do as many as you can from memory.
B. Evaluate the first 5 perfect cubes, i.e. write 1^3, 2^3, 3^3, 4^3, and 5^3. Do as many as you can from memory.
C. Evaluate the first 3 perfect fourth powers, i.e. write 1^4, 2^4, and 3^4. Do as many as you can from memory.
D. Try to take the square root of a negative number on your calculator. What happens?
E. True or False? There is no such thing as the square root of a negative number.

pg 423: 1-12

F. Give two numbers whose square roots are themselves.
G. Evaluate 20^2, 2^2, 0.2^2, and 0.02^2. What do you notice?

pg 424: 13-16

H. Find $\sqrt{2}$ on your calculator. Then multiply the number on your calculator by itself. What do you notice?
I. Fill in the table.

radical	exponent
$\sqrt{5}$	
	$3^{\frac{1}{2}}$
$\sqrt[3]{17}$	
	$16^{\frac{1}{7}}$
	$5^{\frac{3}{2}}$
$\sqrt[3]{4^5}$	

pg 424: 17-19,21,24,26,27,

J. True or False? $2^{-4} = -2^4$

pg 424-426: 41-44,46,47,50,51,53-55,58,62,65,69,74,78,87,89

K. Fill in the box: $\sqrt[3]{\sqrt[3]{x}} = x^{\square}$.
L. How is $\sqrt[2]{x}$ usually written?

Hw 7.2:

A. Why is it necessary to assume the variables represent nonnegative numbers?
B. Find $x^{\frac{1}{3}}x^{\frac{4}{3}}$ and $\left(x^{\frac{4}{5}}\right)^2$.

pg 430: 2,3,7,13,18,19,24,31,39

C. Multiply $\sqrt{z}\left(\sqrt{z}-5\right)$.
D. Multiply $\left(\sqrt{a}+1\right)^2$.
E. Multiply $\sqrt[4]{y}\left(\sqrt{y}-\left(\sqrt[5]{y}\right)^3\right)$.

pg 431: 42,45,47,52,53,56,58,59,62,64,67

F. What does annual rate of return mean?

pg 431-432: 72,73

Hw 7.3:

A. From memory, list the first 15 perfect squares.

B. List the powers of 2 from 2^1 up to 2^6. Try to do this without a calculator.

C. Write the following numbers as a number times a perfect square: 50,48,63,20

D. Write the following numbers as a number times a perfect cube: 54,128,250,24

pg 440-441: 1-5,8-10,13,14,19-24,28,30

E. The expression $b^2 - 4ac$ is called the discriminant. Where does it come from?

pg 441: 35,37,40

F. What needs to be multiplied by the following numbers to get 2? $\sqrt{2}$, $\sqrt[3]{2}$, $2^{\frac{3}{4}}$, $2^{\frac{3}{10}}$

pg 441: 42,43,45,46,49,51,55,62,64

G. True or False? $\frac{\sqrt{2}}{2} = \frac{1}{\sqrt{2}}$

H. True or False? $\sqrt{(-3)^2} = -3$

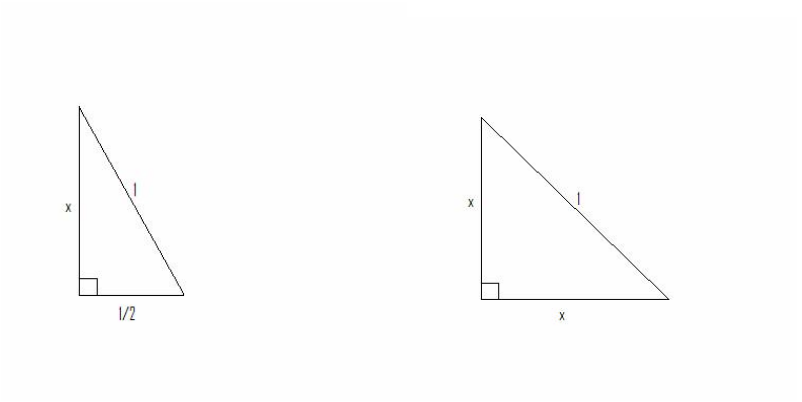
I. True or False? $\sqrt[3]{(-3)^3} = -3$

J. Explain why $\sqrt{x^2} = |x|$ rather than just x.

pg 441-442: 71-73,75,78,81,83,85

pg 443: 103,104

K. Square roots show up in two famous triangles that are important in trigonometry and geometry. Find the lengths of the unknown sides. Be sure to rationalize the denominators. Do you recognize which famous triangles they are?



Hw 7.4:

A. True or False $2\sqrt[3]{7}-5\sqrt{7}=-3\sqrt{7}$

pg 446-447: 2,3,5,8,10,11,14,17,20,23,27,30,35,37,29,47

B. Rationalize the denominator for the following: $\frac{1}{\sqrt{2}}$ $\frac{1}{\sqrt{3}}$ $\frac{1}{\sqrt{7}}$

C. What is the pattern in the above problem? Use the pattern to find $\frac{1}{\sqrt{13}}$.

Hw 7.5:

A. What does *nonnegative* mean? Tell me what it is, not what it's not.

B. Find the product $(a + b)(a – b)$.

C. If $x – 2$ is nonnegative, what is $\sqrt{(x-2)^2}$?

D. If we don't know if $x – 2$ is nonnegative, what is $\sqrt{(x-2)^2}$?

pg 452: 1,2,4,5,8,9

E. Find $\sqrt[3]{8}\sqrt[3]{64}$.

pg 452: 12,14

F. True or False? $2\sqrt{5}=\sqrt{5}2$

pg 452: 19,22,25,30,31,34,35

G. Find the conjugate of the following: $\sqrt{3}-\sqrt{2}$ $-\sqrt{7}+\sqrt{11}$ $\sqrt{3}+1$ $\sqrt{a}-\sqrt{b}$.

H. Find the product $\left(\sqrt{a}-\sqrt{b}\right)\left(\sqrt{a}+\sqrt{b}\right)$.

I. What is the short cut for finding the product of conjugate pairs?

pg 453: 39,40,43,46,48,52-54,58,59,61,69

Hw 7.6

A. What is an extraneous solution?

pg 460-461: 2,3,8,9,13,18,20,24,26,27,31,36-38,47

B. Graph $y=\sqrt{x}$ using the point-plot method.

C. What is the domain of $y=\sqrt{x}$?

pg 461: 49 How does the graph compare to that of $y=\sqrt{x}$?

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pg 461-462: 63,65,68,76

Hw 7.7

A. What is i ?

pg 468: 1-8

B. Simplify i, i^2, i^3, i^4, i^5, i^6, i^7, i^8, i^9. What do you notice?

C. Explain how to find powers of i.

pg 468: 9-12

D. Complex numbers are of the form $(a + bi)$ where a and b are real numbers. Find a and b for the following numbers: $6 + 9i$, $-4 + i$, $-3i$, 46.

pg 469: 26,27,32

E. Simplify $(7 + 3i) - (-2 - 6i)$

pg 469: 38,42,43,45,48,54

F. What is the conjugate of $2 + 3i$, $-4 - 7i$, 5, $2i$, and $a + bi$?

G. Find the product $(a + bi)(a - bi)$. What do you notice?

H. Find the product $(4 + 5i)(4 - 5i)$. Do this two different ways: First by FOILing and then by using the above formula.

pg 469: 59-61,66,67,69,71,76,79,87

Hw 8.1

A. How is $\pm$ read?

pg 487: 1-3,5,6,8,10,11,13

B. Fill in the table. More than one answer is needed in some places.

Number	Half of the number	Half of the number squared
8		
	-2	
-5		
		$\frac{36}{9}$

pg 488-489: 19,22,24,26,27,29,33,37,44,46,52

Hw 8.2

A. Write the quadratic formula from memory. Be careful about how long your radical and dividing line are!

B. Identify a, b, and c in the following: $5x^2 - 3x + 7$, $-x^2 + 37$, and $\frac{1}{2}x^2 + 6x$.

pg 497: 2,3,10,13,14

C. Solve $x^2 - 4x = -4$

pg 497: 16,21,25

D. Give the least common multiple of x, $x + 1$, and 3

E. Give the least common multiple of $r^2 - 1$ and $5r + 5$

pg 498: 29,34-36

F. Give formulas for $a^3 - b^3$ and $a^3 + b^3$

pg 498: 37,42

G. Solve $x^2 = 0$.

pg 498-500: 45,48,55,56,69,74

H. What is a discriminant?

pg 506: 1,4,8,11

I. When does a quadratic equation have 2 real solutions?

J. When does a quadratic equation have 2 complex solutions?

K. When does a quadratic equation have 1 real solution?

pg 506: 14

L. Draw the graph of a parabola with 2 real roots.

M. Draw the graph of a parabola with 1 real root.

N. Draw the graph of a parabola with 2 complex roots.

Hw 8.4

pg. 506: 23-25

A. Give another equation for #25.

pg 506: 34,35,40

pg 512-515: 2,5,13,16,18,20,28,35b,51

B. What does degree have to do with the number of solutions?

Hw 8.5

pg 525-528: 2,6,7,11,14,15,20,23,24,26,27,33,48

Hw 8.6:

A. What is a positive times a positive? negative times negative? negative times positive? negative times positive divided by negative?

B. When is $(x + 3)$ positive? When is it negative? When is it 0?

C. When is $(x - 2)$ positive? When is it negative? When is it 0?

D. When is $(x - 2)(x + 3)$ positive? When is it negative? When is it 0?

E. When is $\frac{x-2}{x+3}$ positive? When is it negative? When is it 0?

pg 534-536: 2,9,14,20,21,23,27,29,32,33,38,42,49

Hw 9.1:

pg 549: 1,3,5,6,8

A. Graph $y = 2^x$ using the point-plot method.

B. Graph $y=\left(\frac{1}{2}\right)^x$. Compare the graph to that of $y = 2^x$.

pg 549: 10 Compare the graph to that of $y = 2^x$.

pg 549: 13 Compare the graph to that of $y = 2^x$.

pg 549: 14 Compare the graph to that of $y = 2^x$.

C. Find *e* using your calculator.

D. What is *e* rounded to the nearest ones place?

pg 549-553: 15,21,23,24,26,33,44a,f,g,h

Hw 9.3:

pg 567-568: 2,5,7,12,15,17,18,20,24,25,27,28,32,34,45-47,50,51,53,56,57,59,62,64,65

Hw 10.1:

pg 605-608: 1,3,6,9,12,13,15,18,20,21,24,25,28,32,34,35,38,39,63