

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 5.1:

pg 287: 1-12

A. Evaluate  $2^1$ ,  $2^0$ ,  $10^4$ , and  $10^{-2}$ .

B. Simplify  $x^{-1}$ ,  $x^1$ ,  $(x^a)^b$ ,  $x^{-a}$ ,  $x^0$ ,  $\frac{x^a}{x^b}$ ,  $(xy)^a$ ,  $\left(\frac{x}{y}\right)^a$ .

pg 287: 13-20

C. Simplify  $10^3 10^5$ .

pg 288: 21-25,28

D. Simplify  $2^{-1}$ ,  $\left(\frac{1}{2}\right)^{-1}$ ,  $\frac{1}{2^{-1}}$ ,  $10^{-3}$ ,  $10^{-1}$ ,  $-2^0$ ,  $(-2)^0$ ,  $1^0$ ,  $1^{-1}$ ,  $0^{-1}$

pg 288: 29-31,33,36,37,39

E. Simplify  $10^5 10^{-2}$ ,  $10^{-11} 10^6$ ,  $10^{-2} 10^2$ ,  $10 \cdot 10^{-3}$

pg 288: 41-43,46,47,50,53,56

F. Simplify so there is no denominator.  $\frac{10^9}{10^4}$ ,  $\frac{10^{-5}}{10^2}$ ,  $\frac{10^6}{10^{-3}}$ ,  $\frac{10^6 10^{-8}}{10^4}$

pg 288: 61,62,67,68

G. What advantage does scientific notation have?

H. Write one million in scientific notation.

I. True or false?  $27.6 \times 10^{-3}$  is in scientific notation.

J. What's the difference between  $5.1 \times 10^4$  and  $5.1 \times 10^{-4}$ ?

pg 288-290: 71-74,77-82,84,88,89

K. Give an example of a very large number and a very small number that are famous or of interest and give the numbers in scientific notation.

pg 290: 100

L. This riddle is a famous nursery rhyme:

*As I was going to St. Ives,  
I met a man with seven wives,  
Every wife had seven sacks,  
Every sack had seven cats,  
Every cat had seven kits -  
Kits, cats, sacks, and wives,  
How many were going to St. Ives?*

Explain your answer, as there is more than one way to interpret the question.

Hw 5.2:

A. What is a polynomial?

B. What is a monomial?

C. What is a binomial?

D. What is a trinomial?

E. What is a leading coefficient?

F. What is the degree of a polynomial?

pg 295: 1,4,9,12

G. True or False?  $5x^2 + 2x = 7x$

H. True or False?  $8ab - 15ba = -7ab$

I. True or False?  $2x^2y - 3xy^2 = -x^2y$

pg 295-297: 14,15,17,20,22,25,26,30,39,44,47,50,53,62,67abc

Hw 5.3:

pg 304: 1,2,4,5,7,18

A. Explain *FOIL*

B. Identify the *First, Outer, Inner, and Last* of  $(2a + 3)(3a + 2)$ .

pg 304: 20,21,23,28,29

pg 192 & 193: 15,16,26

pg 304: 32,34,36,39

C. True or False?  $(a - b)^4 = a^4 - b^4$

D. True or False?  $(a - b)^2 = (b - a)^2$

pg 304-306: 41,51,64,69

Hw 5.4:

pg 309: 1,4,5,7,10,15,18,21,24,25

A. True or False?  $x^2(2 - 3x) = -x^2(3x - 2)$

pg 310: 37,32,35,36,51

Hw 5.5

A. What possible ways can two integers be multiplied together to get 12?

B. Which of these add together to get 7? -7? 8? -13?

C. True or False?  $(x + 3)(x + 4) = (3 + x)(4 + x)$

D. Factor  $x^2 + 8x + 12$ .

E. Factor  $x^2 - 13x + 12$ .

pg 316: 1-5,7,12,13,15,18,22

F. True or False? Everything can be factored nicely.

pg 316 & 317: 26,29,36-39,46,53,68,69,72,77

Hw 5.6:

A. Explain how to factor perfect squares.

B. Find the products  $(x + a)^2$ ,  $(x - a)^2$ , and  $(x - a)(x + a)$ .

C. Find  $\sqrt{25}$ ,  $\sqrt{16b^2}$ ,  $\sqrt{x^6}$ , and  $\sqrt{\frac{49}{81}}$ . Here  $b > 0$ .

pg 323: 1-4,8,11,16,21,22,24,25,28,32

D. Simplify  $(x^2)^2$  and  $(x^3)^2$ .

pg. 323 & 324: 33-35,38,39,45,48,49,60,63-66,83,86

Hw 5.8:

A. True or False? If  $ab = 0$ , then  $a$  and  $b$  must both be 0

B. True or False? If  $ab = 0$ , then  $a$  or  $b$  must be 0

C. True or False? If  $ab = 0$ , then  $a$  and  $b$  are not necessarily 0

D. Solve  $(x - 3) = 0$

E. Solve  $(x + 5) = 0$

F. Solve  $(2x + 3) = 0$

G. Solve  $(2x - 4) = 0$

pg 334 & 335: 2,3,6,9,10,16,20,24,28,33

H. Write a theorem by completing the following:

If  $abc = 0$ , then \_\_\_\_\_

J. True or False? The solution to  $(x = 6)(x - 2) = -7$  is  $\{-6, 2\}$ .

K. What are integers?

L. What is the Pythagorean Theorem? Include a picture with your answer.

M. What is the area of a rectangle? Include a picture with your answer.

pg 335 & 336: 39,43,44,48,61

Hw 6.1:

A. How are the following read?  $g(x)$ ,  $\{x \mid x \neq 2\}$

B. What is a rational function?

pg 355: 2,5,8

C. Give a function whose domain is  $\{x \mid x \neq -3\}$

pg 355: 10,12,17,19-22,25,32

pg 193: 20-22

D. True or False?  $x - 4 = -(4 - x)$

pg 356: 33-36

pg 366: 13,14,16

pg 356: 40,41

E. What is the difference between the graph of  $f$  and  $g$ ?

F. Give a formula relating distance traveled, time traveled, and the rate traveled.

G. Give a formula for circumference. Include a picture.

pg 357 & 359: 54,55,69abc

Hw 6.2:

pg 365 & 366: 3,8-10,19,20,23

A. When can synthetic division be used?

pg 679: 1. Plug -2 into the numerator. What do you notice?

pg 679: 3. Plug 1 into the numerator. What do you notice?

pg 679: 6. Plug 2 into the numerator. What do you notice?

pg 679: 10. Plug 5 into the numerator. What do you notice?

B. Complete this theorem based on what you noticed: The remainder when a polynomial  $p(x)$  is divided by  $x - k$  is \_\_\_\_\_.

pg 366: 25,28,29,34,35

C. What is your favorite method of dividing polynomials? (choose from factoring, synthetic, long division)

pg 366-368: 37,40,41,46,63

Hw 6.3:

pg 374: 1-4

A. Evaluate  $1 \div \frac{2}{3}$  and  $\frac{5}{8} \div 2$ .

pg 374-376: 5-7,10,12-14,16,17,19,24,29,34,44,45,48,52,58

Hw 6.4:

pg 383: 1-6,9,10

A. Evaluate  $\frac{3}{8} + 1$  and  $\frac{7}{13} - 2$ .

pg 383-386: 12,13,15,16,19,24,28,29,35,36,39,43,50,55,58,64,67,68,81

Hw 6.5:

A. Simplify  $\frac{1}{\frac{5}{24}}$ ,  $\frac{\frac{2}{19}}{1}$ ,  $\frac{\frac{3}{14}}{2}$ ,  $\frac{0}{\frac{1}{3}}$ ,  $\frac{0.5}{7}$

pg 388-390: 1-3,6,8,9,11,13,18,28,31,38

Hw 6.6,6.7:

pg 395: 2,5,12,14,15

A. What is an extraneous solution?

pg 395-398: 18,19,22,30,33,49,52,69

pg 404-405: 5,10,23,28