Math 1050
Exam Chapter R & 1
Instructor: Lynn Lindsay

Directions: Read each problem carefully and make sure you understand what the problem asks you to do. Work out your solution steps neatly and in order on your scratch paper and be sure you put your name on it. When you are satisfied that your solution is correct, place your answer on the answer sheet provided you. Remember that you can rework problems that you miss for one half credit that will be added to your original exam score. **DO NOT WRITE ON THIS EXAM!**

1. The sets E and H are given below.

$$E = \{ b, f, g \}$$
$$H = \{ a, c, h \}$$

Find the intersection of E and H.
Find the union of E and H.
Write your answers using set notation.

2. What are the degree and leading coefficient of the polynomial?

$$5 - 12y^3 - 23y^4 - 10y$$

3. Solve for u.

$$\frac{8u-5}{2} = \frac{u+8}{8} + 12$$

Simplify your answer as much as possible.

4. Rachel has scored 31, 28, 26, 21, and 22 points in her five basketball games so far. How many points does she need to score in her next game so that her average (mean) is 26 points per game?

5. Simplify.

$$\frac{z}{z^{-6}}$$

Write your answer with a positive exponent only.

6. On Sunday, a local hamburger shop sold a combined total of 420 hamburgers and cheeseburgers. The number of cheeseburgers sold was three times the number of hamburgers sold. How many hamburgers were sold on Sunday?

7. Multiply.

$$\frac{5}{3} \cdot \frac{-6}{-7} \cdot 4$$

Write your answer in simplest form.

8. Rationalize the denominator and simplify.

$$\sqrt[4]{\frac{3x^{13}}{2w}}$$

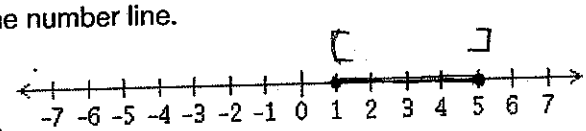
Assume that all variables represent positive numbers.

9. Simplify.

$$\left(2x^2\right)^5$$

Write your answer without parentheses.

10. Graph the set $\{x \mid 1 \leq x \leq 5\}$ on the number line.



Then, write the set using interval notation.

11. Evaluate the expression when $c = 5$ and $y = -6$

$$-c+9y$$

12. Use the quadratic formula to solve for x.

$$3x^2+9x+4=0$$

13. Simplify the expressions below as much as possible.

Leave no negative numbers under radicals and no radicals in denominators.

A $\dfrac{\sqrt{-80}}{\sqrt{-16}} =$

B $\sqrt{-12} \cdot \sqrt{-3} =$

14. Evaluate.

$$-\left(2-\left(-2\right)^{2}\right)^{2}-3\cdot\left(-4\right)$$

15. Add.

$$\frac{2}{3x^{2}-4x-15}+\frac{1}{3x^{2}+17x+20}$$

Simplify your answer as much as possible.

16. The gas tank of a truck is a cylinder 4 ft long with a diameter of 2.25 ft. At the gas station, a pump pours gas at the rate of $3\ \text{ft}^3$ per minute. How many minutes does it take to fill the empty tank with that pump?

Use the value 3.14 for π, and round your answer to the nearest minute.

17. Simplify. Write your answer using only positive exponents.

$$\left(4y^{4}z^{-3}\right)^{-3}$$

18. Find all real number solutions to $\sqrt[3]{6y+5}+1=0$

19. For each equation below, indicate the property that justifies the equation.

	Equation	Property
A	$4\cdot b=b\cdot 4$	
B	$3+(a+8)=(3+a)+8$	
C	$m\cdot 0=0$	
D	$1\cdot d=d$	

20. Solve for x, where x is a real number.

$$\sqrt{8x-7}-\sqrt{2x-4}=3$$

21. Solve for w.

$$|w|-15=-9$$

22. Working together, two pumps can drain a certain pool in 4 hours. If it takes the older pump 12 hours to drain the pool by itself, how long will it take the newer pump to drain the pool on its own?

Do not do any rounding.

23. Solve. (If there is more than one solution, separate them with commas.)

$$(5z+4)(3+z)=0$$

24. Rueben's Coffee Shop makes a blend that is a mixture of two types of coffee. Type A coffee costs Rueben $\$4.30$ per pound, and type B coffee costs $\$5.55$ per pound. This month's blend used three times as many pounds of type B coffee as type A, for a total cost of $\$481.85$. How many pounds of type A coffee were used?

25. Deandre is choosing between two exercise routines.

In Routine #1, he burns 22 calories walking. He then runs at a rate that burns 18.5 calories per minute.
In Routine #2, he burns 48 calories walking. He then runs at a rate that burns 15.25 calories per minute.

For what amounts of time spent running will Routine #1 burn fewer calories than Routine #2?
Use t for the number of minutes spent running, and solve your inequality for t.