EXAM 2 REVIEW – MATH 002

The following is a review of the concepts you should know for this exam. This review is a sample and is not intended to mirror the test questions. In addition, any problems similar to those discussed in class or in assigned homework sets may be assessed on the exam.

1. Find the solution set for each of the following:
   a) $|2x+5| = 13$ b) $|4-7x| = -8$

   c) $|\frac{2}{3}x+1| - 4 = -2$ d) $|4-5n| = |2n+3|$

2. Solve. Graph on a number line and write the solution in interval notation.
   a) $-3(t+8) - 5t > 4t - 9$ b) $0.7x - x \leq 0.45$ c) $\frac{1-2x}{3} + \frac{3x+7}{7} > 1$

3. Gavin Brown can pay his housekeeper $25 per week to do his laundry, or he can have the Laundromat do it for 90 cents per pound for the first 10 pounds and 80 cents for each additional pound. Use an inequality to find the weight at which it is more economical to use the housekeeper than the Laundromat.

4. Solve. Write the answer in interval notation.
   a) $|4x+2| - 7 \geq 11$ b) $|3p-2| < 4$

5. Simplify. Do no use negative exponents in the final answers.
   a) $(-x)^0$ b) $\frac{10x^{11}y^5}{2x^4y^3}$ c) $(5a^2b^3)(3a^{-4}b^{-1})$ d) $(\frac{y^2z^3}{5})^{-3}$

6. Convert to scientific notation:
   a) $82,500,000$ b) 0.0000091

7. Convert to decimal notation:
   a) 4.371×10^5 b) 1.73×10^{-5}

8. Subtract $(4p^2 - 7p + 3)$ from the sum of $5p^2 - 6p$ and $(-2p^2 + 3p - 1)$

9. Multiply:
   a) $(3w+5)^2$ b) $(a+4)(a^2-4a+16)$ c) $(x-1)(x+1)$

10. If $f(x) = 2x^2 + 5x$, find $f(k-3)$

11. Factor completely:
    a) $-5a^4b^7 + 15a^5b^8$ b) $x^2 - x - 56$ c) $16m^2 - 8mn + n^2$
    d) $8x^2 - 44x + 20$ e) $27x^3 + 8y^3$ f) $x^2y - 36y + 6x^2 - 216$

12. Solve by factoring.
    a) $x^3 - 64x = 0$ b) $2x^2 - 7x - 4 = 0$ $6x(x-3) = x+7$

13. The length of a rectangle piece of carpet is 5 meters less than twice its width. Find the dimensions of the carpet if its area is 33 square meters.

14. Write an equation whose solutions are $4, -\frac{1}{3}$

15. The shorter leg of a right triangle is 2 less than the other leg. If the hypotenuse is 10, solve an equation to find the lengths of the two legs.

16. $|2x-1|=4$ is equivalent to
    a) $2x-1=4$ or $2x-1=-4$ b) $2x+1=4$ or $2x+1=-4$
    c) $|2x|=5$ or $|2x|=-5$ d) $|2x|=3$ or $|2x|=-3$

17. The inequalities $x+2>1$ or $x+2<-1$ can be expressed by
    a) $|x+2|<-1$ b) $|x+2|>1$
    c) $|x+2|=1$ d) no other expression is possible

18. When solving $|x+2|-3<6$ the first step is
    a) $x+2+3<6$ b) $x+2+3>-6$
    c) $|x+2|<9$ d) $|x+2|<-3$

19. A number or the product of a number and one or more variable(s) is called
    a) a coefficient b) a factor c) a term

20. In the equation $y=2x+5$, the integer 5 is called a
    a) constant term b) variable c) coefficient

21. A binomial is a polynomial with how many terms?
    a) one b) two c) three

22. Given $x=-2, x=3$ as the zeros of a polynomial. Then the following represents a possible polynomial with those zeros.
    a) $(x+2)(x-3)=0$ b) $(x-2)(x+3)=0$
    c) $-2x(x+3)$ d) $x(3x-2)$

23. The area of a rectangle is 192 ft^2. If the length is four feet more than the width, then the equation for the area can be written as
    a) $w(w+4)=192$ b) $l(w+4)=92$
    c) $w(l+4)=192$ d) $2l+2w+4=192$

Answers

1. a) $x = 4, -9$ b) $\emptyset$ c) $x = \frac{3}{2}, -\frac{9}{2}$ d) $n = \frac{1}{7}, \frac{7}{3}$
2. a) $t < -\frac{5}{4}; \left(-\infty, -\frac{5}{4}\right)$ b) $x \geq -1.5; [-1.5, \infty)$ c) $x < \frac{7}{5}; \left(-\infty, \frac{7}{5}\right)$
3. more than 30 pounds
4. a) $(-\infty, -5] \bigcup [4, \infty)$ b) $\left(-\frac{2}{3}, 2\right)$
5. a) 1 b) $5x^7y^2$ c) $\frac{15b^2}{a^2}$ d) $\frac{5^3}{y^6z^9}$
6. a) 8.25×10^7 b) 9.1×10^{-6}
7. a) $437,000$ b) $.0000173$
8. $-p^2 + 4p - 4$
9. a) $9w^2 + 30w + 25$ b) $a^3 + 64$ c) $x^2 - 1$
10. $2k^2 - 7k + 3$
11. a) $-5a^4b^7(1 - 3ab)$ b) $(x + 7)(x - 8)$ c) $(4m - n)^2$ d) $4(2x - 1)(x - 5)$ e) $(3x + 2y)(9x^2 - 6xy + 4y^2)$ f) $(y + 6)(x + 6)(x - 6)$
12. a) $x = 0, 8, -8$ b) $x = -\frac{1}{2}, 4$ c) $x = -\frac{1}{3}, \frac{7}{2}$
13. 5.5 by 6
14. $3x^2 - 11x - 4 = 0$
15. 6 and 8
16. a
17. b
18. c
19. c
20. a
21. b
22. a
23. a