FINAL EXAM - MTH 099 INTERSESSION 2011

MTH 099 (144 + 6 free)
3 June, 2011

Name: _____

Read the following information before starting the exam:

- Read the instructions at the top of the next page. Please mark in the table your responses from the multiple choice questions that appear throughout the test in the appropriate area on page 2. If an answer does not appear on page 2, then that answer will not be considered.

FOUR

CROSS OUT THE ~~THREE~~ PROBLEMS YOU WOULD LIKE ME TO NOT GRADE.

Problem Number	Response?
1	a.) b.)
2	a.) b.)
3	a.) b.)
4	a.) b.)
5	a.) b.)
6	a.) b.) c.)
7	a.) b.)
8	a.) b.)
9	a.) b.)
10	a.) b.)
11	a.) b.)
12	a.) b.)
13	a.) b.)
14	a.) b.)
15	a.) b.)
16	a.) b.)
17	
18	a.) b.)
19	a.) b.)
20	a.) b.)
21	a.) b.)
22	

1. (*8 points*) Find the GCF of...

(a) 75 and 30

A) 5

B) 10

C) 15

D) 30

(b) $6a^2b$ and $3ab^3$

A) $6ab$

B) $3a^2b$

C) $3ab$

D) $3ab^2$

2. (*8 points*) Factor the binomial.

(a) $x^2 - 16$

A) $(x+16)(x-16)$

B) $(x+2)(x-2)$

C) $(x+4)(x+4)$

D) $(x+4)(x-4)$

(b) $x^4 - 36$

A) $(x+6)(x-6)$

B) $(x+36)(x-36)$

C) $(x+9)(x+4)$

D) $(x-9)(x+4)$

3. (*8 points*) Simplify.

(a) $\sqrt{x^6}$

A) x^6

B) x^5

C) x^3

D) $\sqrt{x^3}$

(b) $\sqrt{x^2y^2z^5}$

A) xyz^2

B) $xyz^2\sqrt{z}$

C) $xyz\sqrt{z}$

D) $\sqrt{xyz^2}$

4. (*8 points*) Simplify.

(a) $8^{\frac{2}{3}}$

A) 2

B) 4

C) $\frac{16}{3}$

D) 8

(b) $81^{\frac{1}{4}}$

A) 3

B) $\frac{81}{4}$

C) 9

D) 27

5. (*8 points*) Recall that a relation is defined as a set of ordered pairs.

(a) Is the relation consisting of the points $(2,3)$, $(9,7)$, $(-6,1)$, $(-6,2)$, $(7,9)$, and $(11,2)$ a function?

A) Yes

B) No

~~C)~~

~~D)~~

(b) Is the relation consisting of the points $(3,3)$, $(1,2)$, $(13,23)$, and $(3,42)$ a function?

A) Yes

B) NO

~~C)~~

~~D)~~

6. (*8 points*) To rent a home water softener, there is an installation fee of \$50 plus a \$35 monthly fee.

(a) Write a linear equation to represent the total cost, y of renting the water softener for x months.

A) $y = \$50 - \$35x$

B) $y = \$35 - \$50x$

C) $y = \$35 + \$50x$

D) $y = \$50 + \$35x$

(b) Use the linear equation to compute the cost of renting the water softener for 7 months.

A) \$295

B) \$124

C) \$300

D) \$150

(c) Use the linear equation to compute the cost of renting the water softener for 1 year.

A) \$300

B) \$295

C) \$400

D) \$470

7. (*8 points*) Factor the trinomial.

(a) $x^2 + 5x + 6$

A) $(x+3)(x-2)$ C) $(x+5)(x+1)$

B) $(x+3)(x+2)$ D) $(x-3)(x-2)$

(b) $x^2 + 7x + 10$

A) $(x-5)(x-2)$ C) $(x+7)(x+1)$

B) $(x+5)(x+2)$ D) $(x+5)(x-2)$

8. (*8 points*)

(a) Use the point-slope formula to write an equation of the line with slope -3 passing through the point $(1, 2)$. Write the answer in slope-intercept form.

A) $y = 5x - 3$ C) $y = -3x + 5$

B) $y = 3x - 5$ D) $y = 3x + 2$

(b) Use the point-slope formula to write an expression of the line that passes through the points $(-1, 3)$ and $(-5, -2)$. Write the answer in slope-intercept form.

A) $y = \frac{1}{2}x + 13$ C) $y = \frac{5}{4}x + 2$

B) $y = \frac{5}{4}x + \frac{17}{4}$ D) $y = 2x - 5$

9. (*8 points*)

(a) Find the slope of a line parallel to a line that has slope $\frac{1}{5}$.

A) -5 C) 5

B) $-\frac{1}{5}$ D) $\frac{1}{5}$

(b) Find the slope of a line perpendicular to a line that has slope $\frac{5}{2}$.

A) $-\frac{2}{5}$ C) $\frac{5}{2}$

B) $-\frac{5}{2}$ D) $\frac{2}{5}$

10. (*8 points*) Determine if the pair of lines are parallel, perpendicular, or neither.

(a) $y = -5x + 4$ and $y = -5x - 3$

A) parallel C) neither

B) perpendicular ~~D)~~

(b) $y = 2x + 9$ and $y = 1111x + 11$

A) parallel C) neither

B) perpendicular ~~D)~~

11. (*8 points*) Simplify.

(a) $(-11)^0$

A) 0 C) 1

B) -11 D) 11

(b) 5^{-2}

A) -25 C) 25

B) $\frac{-1}{25}$ D) $\frac{1}{25}$

12. (*8 points*) Simplify.

(a) $\frac{w^3 w^5}{w^2}$

A) w^8 C) w^6

B) w^7 D) w^5

(b) $\frac{x^3 x^8}{x^7}$

A) ~~x^5~~ C) x^3

B) x^6 D) x^4

13. (*11 points*) Solve the equation.

(a) $3x + 1 = 7$

A) 2 C) 3

B) 4 D) 5

(b) $11 - (2w + 1) = 3[(4w + 5) - (w + 1)]$

A) $\frac{3}{10}$ C) $-\frac{3}{11}$

B) $\frac{3}{11}$ D) $-\frac{3}{10}$

14. (*11 points*) Identify each equation as conditional, contradiction, or identity.

(a) $3(z + 1) = 9 + 3z$

A) conditional C) identity

B) contradiction

(b) $2q + 3 = 2(q - 1) + 5$

A) conditional C) identity

B) contradiction

15. (*11 points*) Solve the equation.

(a) $\frac{2}{3}x + 2 = 1$

A) 3/2 C) $-3/2$

B) 2/3 D) $-2/3$

(b) $5.2w + 2.1 = 1$

A) $\frac{-1.1}{5.2}$ (or $\frac{-11}{52}$) C) $\frac{1.1}{5.2}$ (or $\frac{11}{52}$)

B) $\frac{2.1}{5.2}$ (or $\frac{21}{52}$) D) $\frac{-2.1}{5.2}$ (or $\frac{21}{52}$)

16. (*11 points*) Answer each question.

(a) If x represents the first of two consecutive integers, write an expression representing the second integer.

A) $x+1$

C.) $x+3$

B) $x+2$

D) $x+4$

(b) If x represents the first of three consecutive odd integers, write expressions representing the second and third integers.

A) $x+1$ and $x+2$

C) $x+2$ and $x+3$

B) $x+2$ and $x+4$

D) $x+3$ and $x+5$

17. (*11 points*) The total cost (including tax) of a pack of gum is 1.53 dollars. If the sales tax rate is 6 percent, what was the cost of the gum before the tax?

A) \$1.47

C) \$1.48

B) \$1.44

D) \$1.46

18. (*11 points*) Solve for the indicated variable.

(a) Solve $3x - 2w = 9$ for w.

A) $w = \frac{9-3x}{-2}$

C) $w = \frac{3x-9}{-2}$

B) $w = \frac{9-3x}{2}$

D) $w = \frac{9-3x}{2}$

(b) Solve $A = \pi r^2$ for π.

A) $\frac{A}{\pi}$

C) $\frac{A}{r^2}$

D) $\frac{r^2}{\pi}$

B) $\frac{\pi}{A}$

19. (*11 points*) Solve each problem.

(a) The perimeter of a rectangular garden is 16 ft. The length is 3 ft more than the width. Find the length and the width of the garden.

A) $\frac{5}{4}$ and $\frac{11}{4}$

C) $\frac{5}{2}$ and $\frac{11}{2}$

B) 2 and 5

D) 6 and 9

(b) The largest angle in a triangle is five times the smallest angle. The middle angle is three times the smallest angle. Given that the sum of the angles in a triangle is 180 degrees, find the measure of each of the three angles in the triangle.

A) $20^\circ, 60^\circ, 100^\circ$

C) $30^\circ, 70^\circ, 110^\circ$

B) $20^\circ, 80^\circ, 90^\circ$

D) $40^\circ, 80^\circ, 40^\circ$

20. (*11 points*) Find the x-intercept and the y-intercept of each line.

(a) $2x + 3y = 4$

A) x-intercept: $(0, 2)$
y-intercept: $(4/3, 0)$

C) x-intercept: $(2, 0)$
y-intercept: $(0, 4/3)$

B) x-int: $(1, 2)$
y-int: $(3, 4)$

D) x-int: $(3, 4)$
y-int: $(1, 2)$

(b) $4x + 3y = 2$

A) x-int: $(\frac{1}{2}, 0)$
y-int: $(0, \frac{2}{3})$

C) x-int: $(9, 12)$
y-int: $(2, 7)$

B) x-int: $(12, 9)$
y-int: $(7, 2)$

D) x-int: $(0, \frac{1}{2})$
y-int: $(\frac{2}{3}, 0)$

21. (*11 points*) Find the slope of the line between the two points.

(a) $(-2, 4)$ and $(1, 6)$

A) $2/3$

C) $-2/3$

B) $3/2$

D) $-3/2$

(b) $(-6, -1)$ and $(1, 1)$

A) $2/7$

C) $-2/7$

B) $7/2$

D) $-7/2$

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Solve the following system of equations:

$$\begin{cases} 3x - 2y = -10 \\ x + 4y = 6 \end{cases}$$

A) $(-2, 2)$

C) $(2, -2)$

B) $(2, 2)$

D) $(-2, -2)$