

Professor Katiraie MA103 Test Two Form B (Chapters 1,2,3,4,5,6, and 7.1) Fall 07

Name _____(1 Point)

Total Possible Points = 200 Points

Note: Show all work. Unless a problem is marked with an asterisk (*),
use a calculator only to check.

When asked for the equation of a line, the equation should be given in
slope-intercept form.

1. Let $g(x) = x^2 + 7x + 6$ and $f(x) = \frac{1}{2}x + 20$ (9 points)

a. Find x when $f(x) = 6$

b. Find x when $g(x) = 0$

c. Find $f(4) + g(0)$

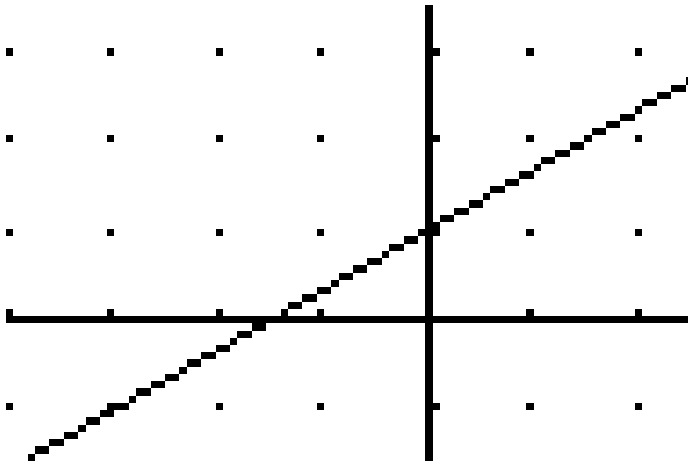
2. Write an equation of the line that passes through $(1, 4)$ and is parallel to the line passing through the points $(3, -6)$ and $(-1, 2)$. (10 points)

3. Simplify: $\left(\frac{x^{-3}y^7z^{-2}}{x^{-5}yz^{-4}}\right)^{-3}$ (Assume no variables are equal to zero.) (5 points)

(Must Show Procedure)

4. Find the equation of the line shown below on the graph.
(Must Show Procedure)

(8 points)



5. The monthly fees for a condo association can be modeled by the following formula:
 $f(x) = 42x + 100$ where x is the number of years since the condo association was
built in 1985. (Must Show Procedure) (10 points)

*a. What were the monthly fees in 2002?

b. Determine the year when the monthly fees were \$478?

c. Interpret the slope as a rate of change.

6. Find the equation of a line perpendicular to $y = -3x + 7$
and passing through $(-4, -2)$ (Must Show Procedure)

(7 points)

7. A student takes out two loans to help pay for college. One loan is at 11% simple interest, and the other is at 7% simple interest. The total amount borrowed is \$4000, and the interest after 1 year for both loans is \$380. Find the amount of each loan.

(10 points)

8. A 10-foot wide sidewalk around a rectangular swimming pool has a total area of 2400 square feet. Find the dimensions of the swimming pool if the pool is 20 feet longer than it is wide.

(10 points)

9. Solve the following system of equations using Elimination method.

(10 points)

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

10. PERFORM THE OPERATION & SIMPLIFY:

(20 points)

a. $\frac{3}{6x^2} - \frac{4}{21x^7}$

b. $\frac{4}{x^2 + 3x} - \frac{1}{x^2 + 7x + 12}$

11. SOLVE FOR X:

$$\frac{x}{x+2} + \frac{7}{x-6} = \frac{14}{x^2 - 4x - 12}$$

(10 points)

12. SOLVE FOR X: *Check for extraneous solutions.*

(10 points)

$$\frac{12}{x - 5} - \frac{3}{x - 2} = \frac{5}{x - 2}$$

13. A vending machine will only accept quarters and dimes. When the coins are collected, the machine has 226 coins worth \$24.10. How many quarters were there? How many dimes? Show your work!

(10 points)

14. CONVERSIONS FROM EXPONENTIAL FORM TO RADICAL FORM AND VICE VERSA:

$$a^{m/n} = \left(a^{1/n}\right)^m = \sqrt[n]{a^m}$$

$$\sqrt{ab} = \sqrt{a} \sqrt{b}$$

$$x^m \cdot x^n = x^{m+n}$$

$$\frac{x^m}{x^n} = x^{m-n}$$

$$(x^m)^n = x^{mn}$$

$$x^{-m} = \frac{1}{x^m}$$

Simplify the following:

(14 points)

A. $\sqrt[3]{-64}$

B. $\sqrt{72x^{18}}$

C. $\left(\frac{x^6}{27}\right)^{\frac{2}{3}}$

D. $\sqrt{(x + 7)^{21}}$

E. $\sqrt{\sqrt{y}}$

F. $\sqrt{72x^8y^5}$

G. $(x^2y^8)^{\frac{1}{2}}$

15. Perform the operation and Simplify the following expressions: (7.5 Points Each)

a) $\frac{x^2 + 3x + 2}{2x + 2} \div \frac{-2x - 4}{x + 1}$

b) $\frac{x^2 + 4}{x^2 - 4} \cdot \frac{x - 2}{x + 2}$

16. Perform the operation and Simplify the following expression expressions: (7.5 Points Each)

a) $\frac{2}{t + 2} - \frac{t}{t^2 - 4}$

b) $\frac{x}{x - 3} - \frac{2x}{x + 4}$

17. State the domain of the following functions. (10 points)
Write your answer in set-builder notation:

a) $g(x) = \frac{1}{x^2 + 81}$

b) $f(x) = \frac{1}{3x - 2}$

c) $h(x) = \frac{1}{x^2 - 9}$

d) $f(x) = \frac{x^2 - 3x + 2}{x}$

18. Solve the following rational equations (8 points Each)

a) $\frac{x}{x+2} = \frac{4}{x-3}$

b) $\frac{5}{t-1} + \frac{2}{t+2} = \frac{15}{t^2 + t - 2}$