M117 Review for Final Exam

Revised **FALL 2007**

PLEASE BE ADVISED THAT THIS REVIEW IS ONLY A SAMPLING OF QUESTIONS FROM THE COURSE. ALL NOTES, HOMEWORK, EXAMS, QUIZZES, ETC. SHOULD ALSO BE REVIEWED. THERE MAY BE PROBLEM TYPES ON THE FINAL EXAM THAT DO NOT APPEAR ON THIS REVIEW.

CHAPTER 7

1) Simplify $\dfrac{-30x^2y^2z^2}{-35xz^3}$

2) Simplify $\dfrac{x^2 - 4}{x^2 + 2x}$

3) Simplify $\dfrac{4x^2 - 15x - 4}{7x^2 - 30x + 8}$

4) Simplify $\dfrac{3x - x^2}{x^2 - 9}$

5) Perform the operation and leave in simplest form. $\dfrac{4x^2}{5y^2} \cdot \dfrac{15xy}{24x^2y^2}$

6) Perform the operation and leave in simplest form. $\dfrac{x^4 - 81}{x^2 - 6x + 9} \div \dfrac{5x^2 + 8x - 21}{6x^2 - 11x - 21}$

7) Perform the operation and leave in simplest form. $\dfrac{6x}{x - 3} - \dfrac{18}{x - 3}$

8) Perform the operation and leave in simplest form. $\dfrac{x + 1}{4} + \dfrac{x - 3}{6} - \dfrac{x - 2}{8}$

9) Perform the operation and leave in simplest form. $\dfrac{7}{3x^2} - \dfrac{9}{4x} - \dfrac{5}{2x}$

10) Perform the operation and leave answer in simplest form. $2 + \dfrac{4x}{3x - 1}$

11) Perform the operation and leave answer in simplest form. $\dfrac{3x}{x^2 - 36} - \dfrac{2}{5x + 30}$

12) Perform the operation and leave in simplest form. $\dfrac{2x}{6x^2 + 11x - 10} + \dfrac{x}{2x^2 - 3x - 20}$

13) Perform the operation and leave in simplest form. $\dfrac{32x + 9}{12x^2 + x - 6} - \dfrac{3}{4x + 3} - \dfrac{x + 5}{3x - 2}$

14) Simplify the complex fraction. $\dfrac{\frac{4}{ab} - \frac{3}{b^2}}{\frac{1}{a} + \frac{3}{b}}$

15) Solve $\frac{5}{7x} - \frac{5}{6} = \frac{1}{6x}$

16) Solve $\frac{5}{2x - 1} = \frac{-6}{3x + 2}$

17) Solve $\frac{2x}{x - 2} + \frac{15}{x^2 - 7x + 10} = \frac{3}{x - 5}$

18) Solve $\sqrt[2]{n}$

30) Given $2x - 3y = 5$ Solve for y and determine the slope and y-intercept.

31) Find the coordinates of two points on the given line, and then use those coordinates to find the slope of the line. $2x + y = 4$

32) Given $y = \frac{2}{5}x - 5$ Determine the slope and y-intercept. Graph.

43) A plumber charges $80 plus $40 for each hour of labor. Let represents the number of hours of labor and is the total cost.

a. Write a linear equation modeling the scenario.
b. Find the total bill if labor is 2 hours.
b. If the total bill is $240, for how many hours of labor was the customer charged?
c. Graph the equation with along the horizontal axis and along the vertical axis.
d. What does the -intercept represent?

44) In a certain city, the cost of a taxi ride is computed as follows: There is a fixed charge of $2.95 as soon as you get in the taxi, to which a charge of $1.65 per mile is added. Find a linear equation that can be used to determine the cost, C(x), of an x-mile taxi ride, and use this equation to find the cost of a 5-mile taxi ride.

45) The cost of manufacturing a molded part is related to the quantity produced during a production run. When 100 parts are produced, the cost is $300. When 600 parts are produced, the cost is $2800. Find a linear equation that models cost, C(x), in terms of the number of parts produced, x.

46) Determine if the relation is a function: {(-9, 9), (-9, -9), (2, 1), (5, 2)}

47) Determine if the relation is a function: {(-1, -4), (2, 7), (4, -4), (8

61) Solve using the elimination by addition method: $\frac{2}{3}x + \frac{1}{2}y = \frac{5}{2}$

$\frac{2}{5}x - y = \frac{1}{5}$

62) Solve using the elimination by addition method: $2x - 6y = 8$

$x - 3y = 4$

76) Simplify $\sqrt{96a^7b^8}$

77) Simplify $\dfrac{\sqrt{5y}}{\sqrt{18x^3}}$

78) Simplify $\dfrac{\sqrt[3]{2y}}{\sqrt[3]{3x}}$

79) Simplify $-3\sqrt{2x^3} + 4\sqrt{8x^3} - 3\sqrt{32x^3}$

80) Simplify $(-3\sqrt{3})(-4\sqrt{8})$

81) Simplify $\left(4\sqrt[3]{3}\right)\left(5\sqrt[3]{9}\right)$

82) Simplify $\sqrt{2x}\left(\sqrt{12xy} - \sqrt{8y}\right)$

83) Simplify $\left(7\sqrt{3} - \sqrt{7}\right)\left(2\sqrt{3} + 4\sqrt{7}\right)$

84) Simplify $\left(2\sqrt{3} + \sqrt{11}\right)\left(2\sqrt{3} - \sqrt{11}\right)$

85) Simplify $2\sqrt[3]{2}\left(3\sqrt[3]{6} - 4\sqrt[3]{5}\right)$

86) Simplify $\dfrac{\sqrt{7}}{3\sqrt{2} - 5}$

87) <u>Rationalize the denominator, then use it to solve the problem.</u> The time T in seconds required for a pendulum of length L feet to make one swing is given by $T = 2\pi\sqrt{\dfrac{L}{32}}$. How long is a pendulum (to nearest hundredth of a foot) if it makes one swing in 3 seconds? Use 3.14 for π.

88) Solve $2\sqrt{n} - 7 = 0$

89) Solve $\sqrt{x^2 + 3} - 2 = 0$

90) Solve $\sqrt{n^2 - 2n - 4} = n$

91) Solve $\sqrt[3]{2x + 5} = \sqrt[3]{4 - x}$

92) Solve $\sqrt{x + 4} = \sqrt{x - 1} + 1$

3

93) Simplify 16

115) Given the following quadratic equation: $y = 4x^2 - 24x + 32$

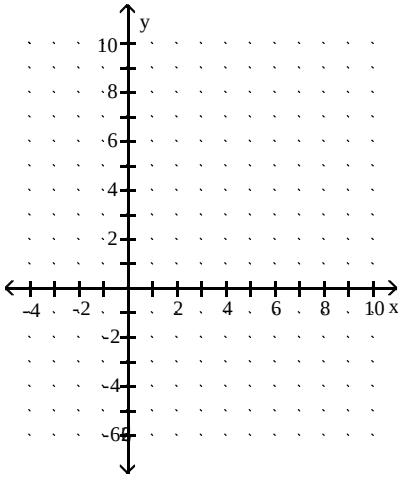
a. What is the vertex?

b. What are the x-intercepts (if any)?

c. What is the y-intercept?

d. Which way does the parabola open?

e. Graph.



Answer Key
Testname: M117 FINAL REVIEW FALL 2007 (2)

1) $\frac{6xy^2}{7z}$

2) $\frac{x - 2}{x}$

3) $\frac{4x + 1}{7x - 2}$

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

5) $\frac{x}{2y^3}$

6) $\frac{(x^2 + 9)(6x + 7)}{5x - 7}$

7) 6

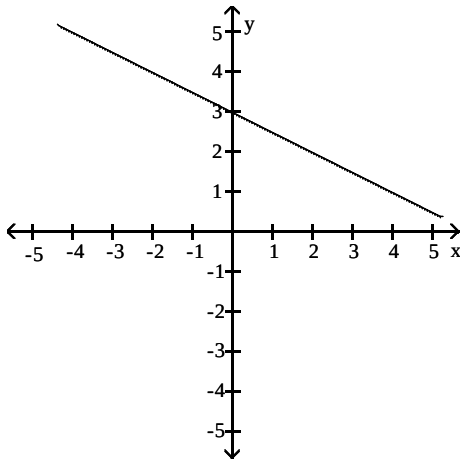
8) $\frac{7x}{24}$

9) $\frac{28 - 57x}{12x^2}$

10) $\frac{10x - 2}{3x - 1}$

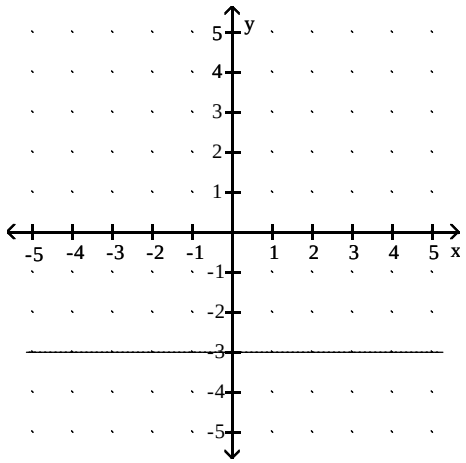
11) $\frac{13x + 12}{5(x +}$

24)



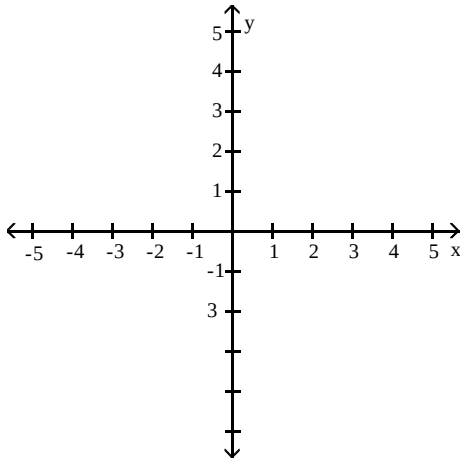
y intercept (0, 6) x intercept (-2, 0)

25) no x-intercepts y-intercept is (0, -3)



30) $y = \frac{2}{3}x - \frac{5}{3}$ $m = \frac{2}{3}$ $b = \left(0, -\frac{5}{3}\right)$

44) $C(x) = 2.95 + 1.65x$
$11.20
45) $C(x) = 5x - 200$
46) No
47) Yes
48) This relation is a function.
49) This relation is not a function.
50) Yes
51) Domain: {9, 6, 5, 2}; range: {-6, -9, -2}
52) a. Domain: all real numbers; range: all real numbers
b. Domain: $\{x \mid x \geq -4\}$; range: all real numbers
53) a. $f(4) = 50$
b. $f(-1) = 15$
54) a. $f(-5) = \frac{3}{-7}$
b. f(2) = undefined
55) a. $f(-2) = 1$
b. $f(0) = -3$
56) (5, 4)



62) Infinitely many solutions
63) $1.60 for a tennis ball and $2.25 for a golf ball
64) 2
65) $x \geq 4$ or $[4, \infty)$
66) 11.256 m/s
67) $\sqrt{6}$
68) $-\frac{2}{3}$
69) $4\sqrt{10}$
70) $-12\sqrt{6}$
71) $\frac{\sqrt{15}}{5}$
72) $\sqrt[3]{9}$
73) $13\sqrt{7}$
74) $\frac{-\sqrt{6}}{2}$
75) $-4\sqrt[3]{2}$
76) $4a^3b^4\sqrt{6a}$
77) $\frac{\sqrt{10xy}}{6x^2}$
78) $\frac{\sqrt[3]{18x^2y}}{3x}$
79) $-7x\sqrt{2x}$
80) $24\sqrt{6}$
81) 60
82) $2x\sqrt{6y} - 4\sqrt{xy}$
83) $14 + 26\sqrt{21}$
84) 1
85) $6\sqrt[3]{12} - 8\sqrt[3]{10}$
86) $\frac{3\sqrt{14} + 5\sqrt{7}}{-7}$
87) $T = \frac{\pi\sqrt{2L}}{4}$; 7.30 ft
88) $\frac{49}{4}$
89) 1, -1
90) ▫
91) $-\frac{1}{3}$
92) 5
93) 64
94) 4
95) -2
96) $5\sqrt[4]{x}$

97) $y^{\frac{1}{12}}$

98) $3xy^2$

99) $\frac{b}{a^{\frac{2}{3}}}$

100) -

115) a. (3, -4)
b. (4, 0) and (2, 0)
c.