M102 Review for Final Exam

Revised **FALL 2011**

1) Find the GCF: 36, 48, 84

2) Find the GCF: $a + b$

5) Factor completely: $x^2 - x - 72$

6) Factor completely: $x^2 + 3x - 70$

7) Factor completely: $x^2 + 3x - 88$

8)

Factor completely: $z^2 - 64$

9) Factor completely: $u^2 - 3uv - 40v^2$

10) Factor completely: $3x^2 - 3x - 18$

11) Factor completely: $5x^4 + 45x^3 + 100x^2$

12) Factor completely: $49x^2 - 64$

13) Factor completely: $15z^2 - 11z - 12$

14) Factor completely: $2ax + ay - 6bx - 3by$

15) Factor completely: $18x^2 - 78x - 60$

16) Factor completely: $36x^3 - 93x^2y + 60xy^2$

17) Factor completely: $49k^2 - 4m^2$

18) Factor completely: $6x^2 + 8x - 9x - 12$

19) Factor completely: $7x^2 - 7$

20) Factor completely: $x^2 - 10xy + 25y^2$

21) Factor completely: $x^3 + 8$

22) Factor completely: $64 - 27y^3$

23) Factor completely: $5a^3 + 625b^3$

24) Factor completely: $a^4 - 81$

25) Factor completely: $10a^2b^2 - 10b^3 + 15a^2b - 15b^2$

Solve the equation.

26) $x^2 - x = 20$

27) Factor completely: $18x^2 - 18$

28) Factor completely: $x^2 - 18xy + 81y^2$

29) Factor completely: $x^3 + 8$

30) Factor completely: $64 - 27y^3$

31) Factor completely: $5a^3 + 625b^3$

32) Factor completely: $a^4 - 81$

33) Factor completely: $10a^2b^2 - 10b^3 + 15a^2b - 15b^2$

Solve the equation.

34) $x^2 - x = 30$

35) $m(m - 1)(m + 2) = 0$

36) $y^3 - 16y^2 + 60y = 0$

37) $16x^2 = 25$

38) $3x(x - 9) = -60$

Set up an equation and solve each 1 **Factor** +.4T94.4T94.4T94.481Tf.25iej/TT41Tf.250TD(+)Tj/TT31Tfwidtha6T7=

40) One leg of a right

69) Simplify $\frac{6\sqrt{5}}{5\sqrt{12}}$

70) Simplify $\frac{3}{\sqrt[3]{3}}$

71) Simplify $13\sqrt{28} - 2\sqrt{63} - 7\sqrt{7}$

72) Simplify $\frac{3}{8}\sqrt{96} - \frac{2}{3}\sqrt{54}$

73) Simplify $-3\sqrt[3]{2} - 2\sqrt[3]{16} + \sqrt[3]{54}$

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

75) Simplify $\frac{\sqrt{5y}}{\sqrt{18x^3}}$

76) Simplify $\frac{\sqrt[3]{2y}}{\sqrt[3]{3x}}$

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

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

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

80) Simplify $\sqrt{2x}\ \sqrt{12xy}$

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

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

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

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

90) Solve $y - 1 = \sqrt{2y - 2}$

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

92) Simplify $16^{\frac{3}{2}}$

93) Simplify $\left(\frac{1}{8}\right)^{-\frac{2}{3}}$

94) Simplify $(-32)^{\frac{1}{5}}$

95) Express in radical form $5x^{\frac{1}{4}}$

96) Simplify $\left(y^{\frac{3}{4}}\right)\left(y^{-\frac{2}{3}}\right)$

97) Simplify $\left(9x^2y^4\right)^{\frac{3}{2}}$

98) Simplify $\left(a^2b^{-3}\right)^{-\frac{1}{2}}$ 1TT41Tf1.07690TD(x)Tj/TT31Tf

103) Solve $(9s + 7)^2 = 9$

104) Solve using the quadratic formula. $9x^2 - 6x + 1 = 0$

105) Solve using the quadratic formula. $4x^2 - 2x = 3$

106) Solve $\frac{5}{n - 3} - \frac{3}{n + 3} = 1$

107) A 24- foot ladder resting against a house reaches a windowsill 16 feet above the ground. How far is the foot of the ladder from the house? (to the nearest tenth of a foot) (NO EQUATION = NO CREDIT)

108) Two pipes together can fill a large tank in 10 hr. One of the pipes, used alone, takes 15 hr longer than the other to fill the tank. How long would each pipe take to fill the tank alone?
(NO EQUATION = NO CREDIT)

109) A square sheet of metal has an area of 676 square inches. What is the length of each side?
(NO EQUATION = NO CREDIT)

110) The length of a table is 15 inches more than its width. If the area of the table is 2106 square inches, what is its length? (NO EQUATION = NO CREDIT)

111) A rectangular sign must have an area of 42 square feet. The length of the sign is 2 feet more than the width. Find the <u>dimensions</u> of the sign. (NO EQUATION = NO CREDIT)

112) Given the following quadratic equation: $y = -(x + 4)^2 + 1$
a. What is the vertex?

114) 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. What is the Axis of are the x- intercepts (if

is

Answer Key
Testname: M102 FINAL EXAM REVIEW

1) 12
2) $3a^4b$
3) $4x^3y^4(10x^5y^4 - 4y^2 - 5x^3)$
4) (a + b)(c + 1)
5) (x + 8)(x - 9)
6) (x +

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

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

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

47) $\frac{x - 2}{(x + 6)(x - 3)}$

48) (x

73) $-4\sqrt[3]{2}$

74) $4a^3b^4\sqrt{6a}$

75) $\frac{\sqrt{10xy}}{6x^2}$

76) $\frac{\sqrt[3]{18x^2y}}{3x}$

77) $-7x\sqrt{2x}$

78) $24\sqrt{6}$

79) 60

80) $2x\sqrt{6y} - 4\sqrt{xy}$

81) $14 + 26\sqrt{21}$

82) 1

83) $6\sqrt[3]{12} - 8\sqrt[3]{10}$

84) $\frac{3\sqrt{14} + 5\sqrt{7}}{-7}$

85) $-4\left(\sqrt{2} + \sqrt{3}\right)$ or $-4\sqrt{2} - 4\sqrt{3}$

86) $\frac{49}{4}$

87) 1, -1

88)

89) $-\frac{1}{3}$

90) 1, 3

91) 5

92) 64

93) 4

94) -2

95) $5\sqrt[4]{x}$

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

97) $27x^3y^6$

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

99) $-\frac{3}{2}, \frac{7}{3}$

100) 12

101) $\pm\frac{2\sqrt{6}}{3}$

102) $-5 \pm 2\sqrt{3}$

103) $\left\{-\frac{4}{9}, -\frac{10}{9}\right\}$

104) discriminant is 0, so 1 real root

$\frac{1}{3}$

105) discriminant is 52, so 2 real roots

$\frac{1 \pm \sqrt{13}}{4}$

106) $1 \pm \sqrt{34}$

107) 17.9 feet

108) 15 hour & 30 hours

109) 26 inches

110) 54 inches

111) $(1 + \sqrt{43})$ yards by $(-1 + \sqrt{43})$ yards

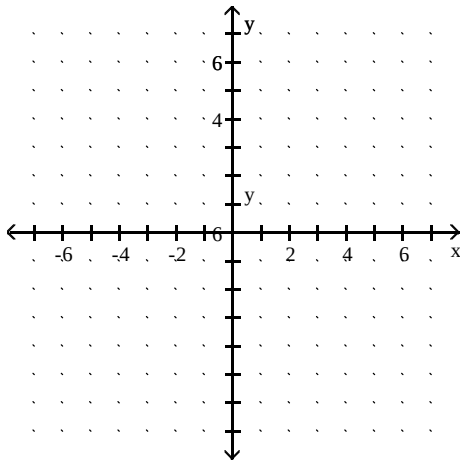
112) a. (- 4, 1)

b. down

c. (0,- 15)

d. x = - 4

e.



114) a. (3, - 4)
b. (4, 0) and (2, 0)
c. (0, 32)
d. up
e. x = 3
f.