Math 2200

Unit Test – Quadratic Equations

Name:_____

Part A: Multiple Choice Place the letter that corresponds with the correct answer in the space provided to the right. (13 marks)

____/25 = %

1. What value of c makes the expression x^2+9x+c a perfect square? 1. ____

A) $\frac{9}{2}$ B) 9

C) $\frac{81}{4}$ D) 81

2. Factor $-3x^2+6x+24$ completely. 2.____

A) $-3(x-4)(x+2)$
B) $-3(x+4)(x-2)$
C) $-3(x-4)(x-2)$
D) $-3(x+4)(x+2)$

3. What are the roots of $x^2=5x+14$? 3. ____

A) x = -2 and x = -7 B) x = -7 and x = 2

C) x = 7 and x = -2 D) x = 7 and x = 2

4. What is the simplest form of $\frac{-5\pm\sqrt{75}}{5}$? 4. ____

A) $1\pm5\sqrt{3}$ B) $-1\pm5\sqrt{3}$

C) $-1\pm\sqrt{75}$ D) $-1\pm\sqrt{3}$

5. What are the zeros of $y=(x-2)(2x+3)$? 5. ____

A) $\{-2,\frac{2}{3}\}$ B) $\{-2,\frac{3}{2}\}$

C) $\{2,-\frac{2}{3}\}$ D) $\{2,-\frac{3}{2}\}$

6. What are the roots of $0=2x^2-36$? 6.____

A) $\pm3\sqrt{2}$ B) $3\sqrt{2}$

C) ±6 D) $\pm6\sqrt{2}$

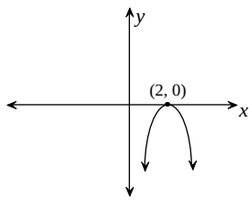
7. The length of a rectangular parking lot is three more than twice its width. If the area is 96 m^2, which equation would be used to determine the dimensions? 7.____

A) $x(2x+3)=96$
B) $2x(x+3)=96$
C) $x(3x+2)=96$
D) $y(2x+3)=96$

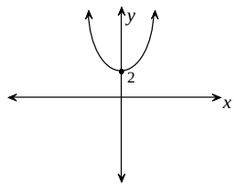
8. A quadratic equation $f(x)=0$ has two different real roots. 8. ____

Which is the graph of $f(x)$?

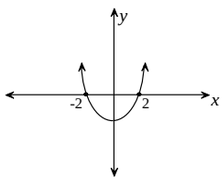
A)



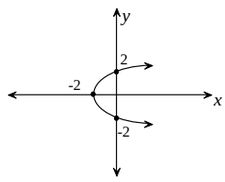
B)



C)



D)



9. Given the quadratic equation $2x^2-4x+c=0$, find the value of c if the equation has two equal real roots. 9 .___

A) $c=-2$ B) $c=2$

C) $c=-\frac{1}{2}$ D) $c=\frac{1}{2}$

10. Given the function $g(x)=-4(x-1)^2+8$ what is the nature of the roots of $g(x)=0$? 10.___

A) no real roots

B) one real root

C) real and equal

D) real and unequal

11. If $x=5$ is one root of the equation $x^2+kx+40=0$, what is the value of 'k'? 11. ___

A) -13 B) -10

C) 10 D) 13

12. What are the roots of $2x^2 - 5x - 3 = 0$? 12.___

A) $\{6, -1\}$ B) $\{-6, 1\}$

C) $\{-\frac{1}{2}, 3\}$ D) $\{\frac{1}{2}, -3\}$

13. Which statement is TRUE of the function $y = -2x^2 + 3$? 13.___

A) The parabola opens down and has a y-intercept of 3, therefore it crosses the x-axis twice.
B) The parabola has a discriminant of -24, therefore has two real roots.
C) The parabola opens down and has a y-intercept of –3, therefore it does not cross the x-axis.
D) The parabola has x-intercepts at –2 and 3.

Part B: Short Answer Questions **Complete each of the following in the space provided. Be sure to show ALL necessary workings to receive full credit.** **(12 marks)**

1. Factor completely. $2(x + 5)^2 + 3(x + 5) - 2$ **(4 marks)**

2. Algebraically determine the **EXACT** roots in simplest form for: **(4 marks)**

$$6(2 - x) = 3x^2 + 6x$$

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3. A rectangular garden has dimensions 10m by 8m. The gardener wants to put a flowerbed of uniform width along two adjacent sides of the garden as shown. If the area of the garden including his new strip is 168 m^2, what is the width of the strip? **(4 marks)**