Accelerated Algebra Test #2 Name:_____
Brewer Winter 2009

Read each question carefully. **Give exact answers.** You must show all work in order to receive full credit. **Circle your final answers for 11-20.** Write all complex number solutions in standard form.

Part I (2 points each)

Match the expression on the left with the property on the right. Write legibly; if I can't tell what letter you wrote, it will be marked wrong.

___ 1. $f(x) = ax + b, a \neq 0$

___ 2. $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

___ 3. $true\ for\ all\ x$

___ 4. $If\ AB = 0, then\ A = 0\ or\ B = 0$

___ 5. $not\ true\ for\ any\ x$

___ 6. $f(x) = ax^2 + bx + c, a \neq 0$

___ 7. $If\ A^2 = B, then\ A = \pm\sqrt{B}$

___ 8. $a + bi$

___ 9. $b^2 - 4ac$

___ 10. $true\ for\ only\ some\ x$

a. zero product property

b. square root theorem

c. discriminant

d. standard form of a complex number

e. standard form of a linear equation

f. standard form of a quadratic equation

g. quadratic formula

h. identity

i. conditional equation

j. contradiction

Part II (8 points each)

11. Solve for x.

$$\frac{3x}{x+4} = 2 - \frac{12}{x+4}$$

12. Solve for x using the quadratic formula.

$2x^2 + 4x + 1 = 0$

13. Solve for x by completing the square.

$3x^2 - 5x + 3 = 0$

14. Solve for f.

$$\frac{w_1}{w_2} = \frac{f_2 - f}{f - f_1}$$

15. Solve for x.

$\sqrt{2x+11} - \sqrt{2x-5} = 2$

16. Solve for x.

a. $|2x+6| = 10$

b. $|3x-7| = -6$

17. Solve for x.

$(x-5)^{3/2} = 125$

18. Solve for x.

$x^3 - 8 = 0$

19. Solve for x.

$2(x+1)^{1/2} - 11(x+1)^{1/4} + 12 = 0$

20. Divide the complex numbers.

$$\frac{4-i}{3+5i}$$

Bonus: Derive the quadratic formula by completing the square with the standard form of a quadratic equation.