

NAME: \_\_\_\_\_ Score \_\_\_\_\_/10

Please **print** your name**USE FUNCTION NOTATION when appropriate!****SHOW ALL YOUR WORK IN A NEAT AND ORGANIZED FASHION****No Decimals, mixed numbers, complex fractions, and boxed or circled answers. Show work.**

1. T **F** Every complex number is a real number.
2. T **F** The graph of a quadratic function is a parabola.
3. T **F** The rule for the squaring function is  $f(x) = \sqrt{x}$ .
4. The equation of the circle with center  $(5, -7)$  and radius 2 is  $(x-5)^2 + (y+7)^2 = 2^2$
5. The discriminant of a quadratic function  $f(x) = 2x^2 - 3x + 4$  is  $b^2 - 4ac = (-3)^2 - 4(2)(4) = -23$
6. The complex component of the complex number  $5 - 2i$  is **-2**
7. **(2 pts.)** Consider the functions  $f$  and  $g$  whose rules are  $f(x) = x^7$  and  $g(x) = 5x + 1$ . Find the rule for the function  $f \circ g$ . Simplify as much as possible. Start correctly!

$$f \circ g(x) = f(g(x)) = f(5x + 1) = (5x + 1)^7$$

8. **(2 pts.)** Solve the equation  $\frac{x+5}{x+3} = \frac{2}{x+3}$

Multiply both sides by  $x + 3$  to obtain

$$x + 5 = 2$$

$$x = -3$$

Test -3: It causes a zero in a denominator hence is not a solution.

The solution set is therefore  $\emptyset$