Name: ⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯   GTID: ⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯

For True/False problems: Fill in the circle completely for the correct answer. If the sentence is False, put the correct expression for the underlined portion in the box.

For everything else: Show all work and ⎡BOX⎤ your final answer for each problem. Answers with no work may receive partial or no credit. Please simplify answers for full credit.

1. (1 point) True or False: The domain of the following function: $f(x) = \dfrac{1}{\sqrt{4 - x^2}}$ is $\underline{[0, 2]}$.

   ○ True

   ○ False

2. (1 point) True or False: The range of f^{-1} equals the $\underline{\text{domain}}$ of f.

   ○ True

   ○ False

3. (1 point) True or False: If no vertical line intersects the graph of a relation at more than one point, then the graph of the relation is the graph of a $\underline{\text{one-to-one function}}$.

   ○ True

   ○ False

4. (1 point) Fill in the blank: The graph of an even function is symmetric with respect to

   the ⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯ .

5. (1 point) Fill in the blank: The graph of $y = -f(x)$ is found by reflecting the graph

   $y = f(x)$ about the ⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯ .

6. (4 points) Simplify: $\left(\dfrac{6}{y^2}\right)\left(\dfrac{-3x^2y^{-2}}{x^3}\right)^{-3}$

7. (4 points) Simplify: $\dfrac{-4}{3-(1-2i)}$

8. (5 points) Find the equation in slope-intercept form of the line which is parallel to the line $x + 2y = 4$ and contains the point $(-4, 3)$.

9. (6 points) Given $g(x) = \sqrt{x} + 1$ and $h(x) = \frac{1}{1-2x}$, find (a) the output values of the composite function $f(x) = (g \circ h)(x) = g(h(x))$ at input values $a = -4$ and $b = 0$, and (b) the average rate of change of $f(x)$ as x changes from $a = -4$ to $b = 0$.

   Hint: for part (b) use the formula $\frac{f(b)-f(a)}{b-a}$.

10. (5 points) Find the x and y intercepts of $y = \dfrac{4x + 8}{2 - 5x}$.

11. (6 points) Find the inverse of f, state the domain and range of f, and state the domain and range of f^{-1}:

$$f(x) = \frac{x}{2x - 1}$$

12. (6 points) Solve the system and classify the type of solutions *(show all steps for full credit)*:

$$\begin{cases} 2x - 3y = 5 \\ 3x - 4y = 8 \end{cases}$$

13. (3 points) Find $f(-2)$:

$$f(x) = \begin{cases} 3x - 2, & x < -5 \\ \frac{1-x^2}{x}, & -5 \le x < -1 \\ |x| + 1, & x \ge -1 \end{cases}$$

14. (6 points) Sketch the function $f(x)$ and determine whether $y = f(x)$ is EVEN, ODD, or neither:

$$f(x) = 2 - |x|$$