

Practice Exam 1

1. Find the inverse of the function $f(x) = \frac{x+2}{x-1}$, and give the domain and range of f and f^{-1} .
2. Let $f(x) = x^2 - 1$ and $g(x) = 4 + x$. Find $(f \circ g)(x)$ and also find the domain of $(f \circ g)(x)$.
3. Write an equation for a function whose graph fits the description given as follows. The graph of $f(x) = x^2$ is shifted 4 units left, and 2 units down.
4. Find the average rate of change of the function $f(x) = 2x(x - 1)$ as x changes from 2 to 4.
5. Make the desired operations and write the complex number in the form $a + bi$.

$$3i(2 - i) + 4i(1 + i)$$

6. Write an equation of the line containing the given point and perpendicular to the given line.

$$(-1, 3); \quad 4x + 3y = 2$$

7. Find an equation of the horizontal line through the point $(-1, 4)$.
8. Solve the equation $x^2 - 5x - 6 = 0$.
9. Find the center and radius of the circle $x^2 + y^2 - 12x + 4y + 31 = 0$.
10. Simplify the expression $\frac{7x^2+7x}{x^2+2x+1}$.