

1. Give the domain of the given function:
 $f(x) = \frac{x^2 + 6x + 5}{\sqrt{x-2}}$

2. $f(x) = \frac{1}{x^2 + x}$, $g(x) = 3\sqrt{x}$. Given $f(x)$ and $g(x)$, find and simplify:
 a) $f \cdot g$
 b) $f \circ g$
 c) $(f \circ g)(2)$

3. Find the rate of change between 2 and x for the given function: $f(x) = 4x^2 - x$

Hint: $\frac{f(x) - f(c)}{x - c}$

4. You are designing an open box (no lid) with a square base of width " x " that must hold a volume of 500 ft^3 .
 a) Write an equation for Area, $A(x)$, that depends only on the width, x .
 b) Material for the base costs \$5.00 per square foot, and the material for the sides costs \$3.00 per square foot. Write an equation for cost, $C(x)$, that depends only on the width, x .

5. Given the parent function $k(x) = x^3$, write an equation that includes the following transformations. Then graph the transformed function.
 a) shift right 4
 b) vertical stretch by 3
 c) vertical reflection
 d) shift down 2

6. Graph the given piecewise function.

$$g(x) = \begin{cases} (x+2)^2 & \text{if } -4 < x < 0 \\ -2 & \text{if } 0 \leq x < 4 \\ \sqrt{x} & \text{if } 4 \leq x < 9 \end{cases}$$
 When finished, state the domain and range.

7. Find the inverse. (Verify your answer). $f(x) = \frac{3x+5}{7x-4}$

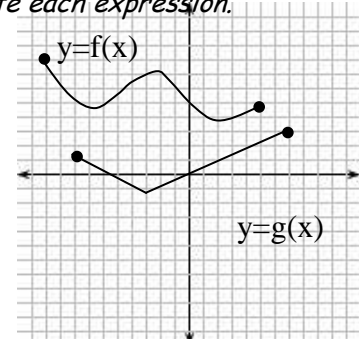
8. Find the slope of the secant line using: $\frac{f(x+h) - f(x)}{h}$, $k(x) = 3x^2 - 2x - 5$

9. Find the domain of the functions and write in interval notation:
 a) $f(x) = \frac{3x^2}{x^2 + x - 2}$ b) $g(x) = \sqrt{x+3}$

10. Given the graphs of $y = f(x)$ and $y = g(x)$ shown in the figure, evaluate each expression.

a) $(f \circ g)(4)$

b) $(g \circ f)(-3)$



11.

X	-2	-1	0	1	2
y	7	6	3	2	0

a) Draw a scatter diagram. Scale and label axes.
 b) Find the line of best fit by mean-mean method.