Pre-Calculus

Functions Review (Chapters 1, 2 & 4)

1. Find the average rate of change of $f(x) = x^2 + 3$ from 1 to 5.	2. Given $h(x) = \begin{cases} 45, & \text{if } 0 \le x < 225 \\ 0.13x + 30, & \text{if } x \ge 225 \end{cases}$ find $h(248)$.	3. If $j(x) = \dfrac{3x}{x^2 + 4}$, find a) $j(-7)$ a)_____ b) $j(2x)$ b)_____

If $f(x) = 2x^2 - 3x + 5$ and $g(x) = x + 3$, find simplified expressions for the following.

4. $f(x) + 7$	5. $f(x + 2)$	6. $-f(x)$
7. g^{-1}	8. $f \circ g$	9. $g \circ f$

10. the difference quotient, $\frac{f(x+h)-f(x)}{h}$

Determine if the following functions are *even*, *odd*, or *neither* algebraically.

11. $f(x) = 4x^3 - 5x + 2$

12. $g(x) = \frac{2x}{x^2+3}$

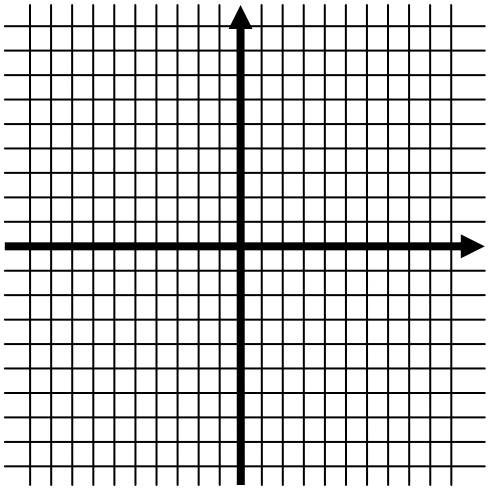
If $f(x) = \frac{5x+4}{x-8}$ and $g(x) = \frac{2}{x+1}$, find the following. Please state the domain of each.

13. f^{-1}

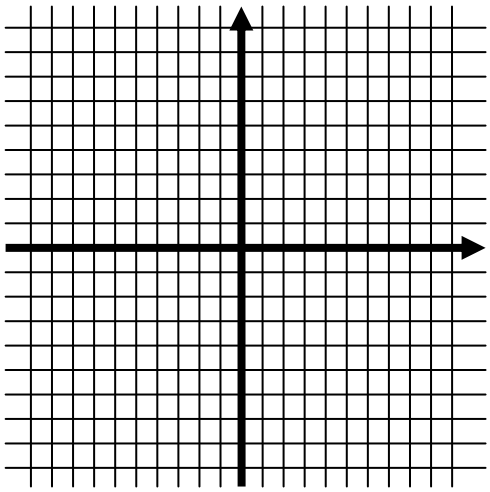
14. $f \circ g$

Graph the following functions. State the domain and range.

15. $f(x) = 2\text{int}(x) - 7$



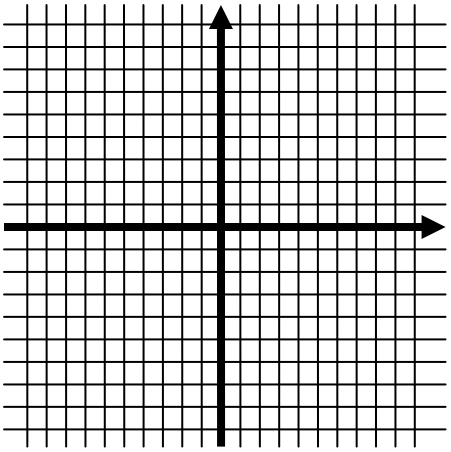
16. $g(x) = \sqrt{7 - x}$



Domain:_____ Range:_____

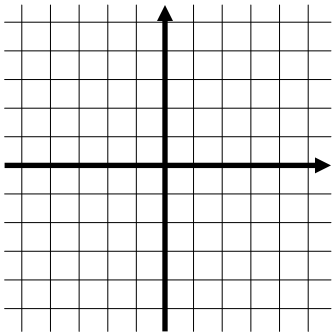
Graph the following functions. State the domain and range.

17. $f(x) = 3\sqrt[3]{x+4} - 6$



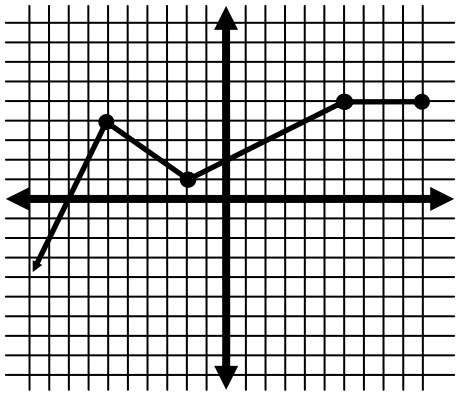
Domain:_____ Range:_____

18. $g(x) = \begin{cases} 3x+4, & x < -2 \\ 5, & x = -2 \\ -x+1, & x > -2 \end{cases}$



Domain:_____ Range:_____

19. Given the graph of $h(x)$, find the following:



a) the domain of $h(x)$

b) the range of $h(x)$

c) $h(7)$

d) the value(s) of x for which $h(x) = -2$

e) the number of times the graph of $y = 3$ intersects the graph of $h(x)$

f) the x-intercept(s)

g) the y-intercept

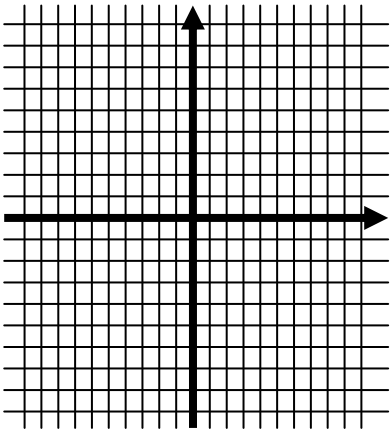
h) the increasing intervals

i) the decreasing intervals

j) the intervals when $h(x) > 0$

k) the local maxima

l) the graph of $2 \cdot h(x + 1)$



m) the graph of $h(2x) - 5$