

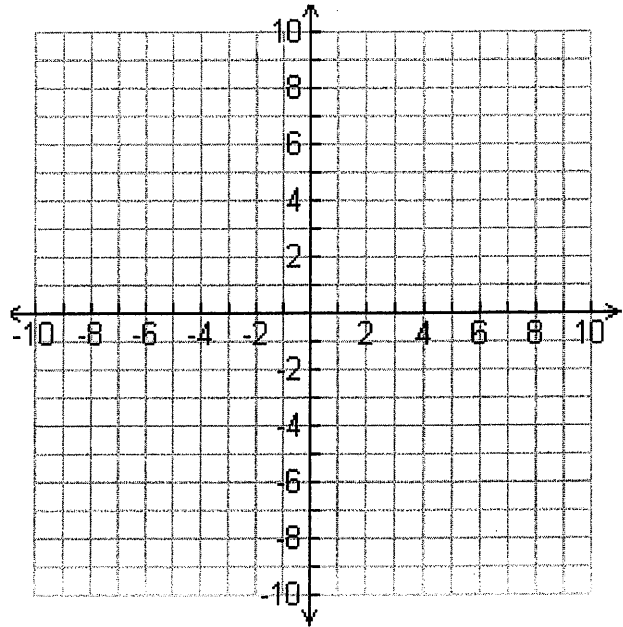
## Non-AP Calculus Ch. P Morning Review

1) Find the domain of  $\frac{1}{\sqrt{7-3x}}$

2) Find  $\frac{f(x+\Delta x)-f(x)}{\Delta x}$  for  $f(x) = 5x^2$

3) Graph the piecewise function and determine Domain and Range

$$f(x) = \begin{cases} 2 - x, & x \leq -4 \\ x^2 - 7, & -4 < x \leq 2 \end{cases}$$



Domain: \_\_\_\_\_

Range: \_\_\_\_\_

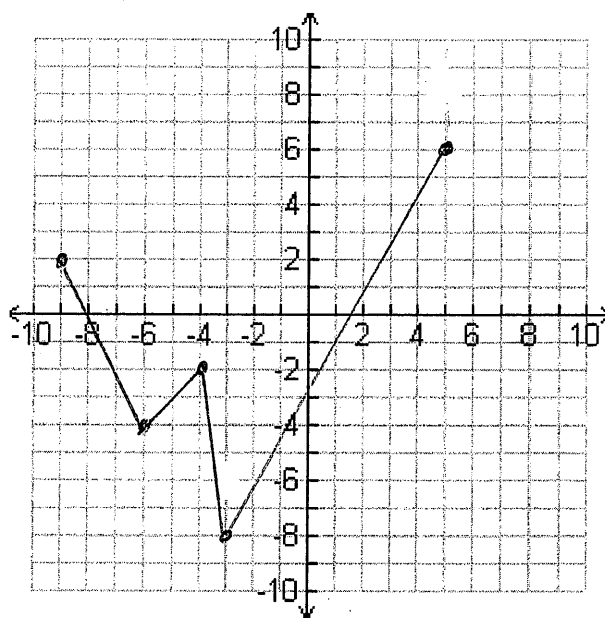
4) Find the equation of line passing through  $(-2, -6)$  and perpendicular to  $5x + 7y = -17$

5) Use the graph of  $f$  shown in the figure to sketch the graph of each function

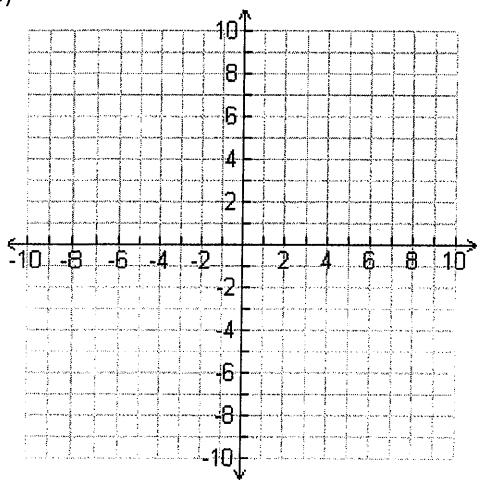
a)  $f(x - 2) + 3$

b)  $\frac{1}{2}f(x)$

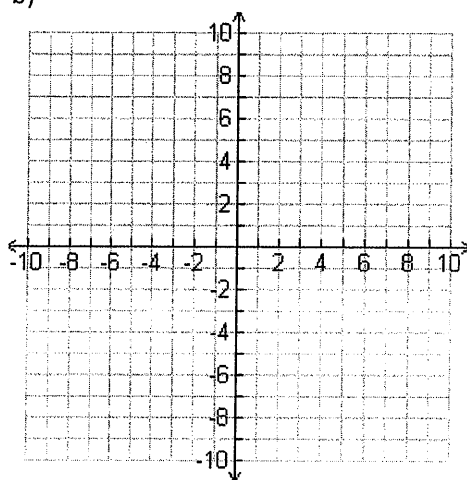
c)  $-f(x)$



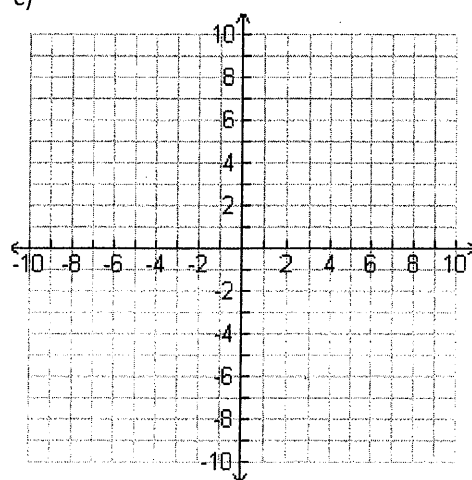
a)



b)



c)



6) Given  $f(x) = 3x^2 - 4x - 2$ , find a simplified expression to represent  $f(x-3) - f(x)$

7) Find all points of intersection (ordered pairs!) of the graphs of  $4x = y^2$   
and  $y = 2x - 4$

8) Evaluate the function as indicated

$$f(x) = \begin{cases} 2 - x, & x < -6 \\ 5 - 3x, & -4 < x \leq 3 \\ 3 - x^2, & x > 3 \end{cases}$$

a)  $f(-10) =$

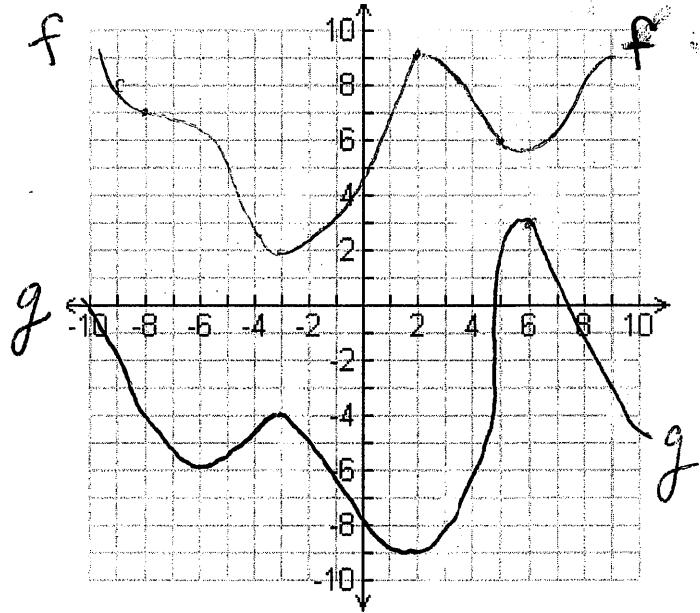
b)  $f(1) =$

c)  $f(3) =$

d)  $f(t^2 + 4) =$

9)

**Evaluating Composite Functions** Use the graphs of  $f$  and  $g$  to evaluate each expression. If the result is undefined, explain why.



(a)  $(f \circ g)(3)$

(b)  $g(f(2))$

(c)  $g(f(5))$

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

10) Determine symmetry for equation: (y-axis, x-axis, origin, none)

$$5xy^3 - 5x^5y^4 - 11y^2 + 13x = 0$$

Non-AP Calculus Ch. P Morning Review

Key

1) Find the domain of  $\frac{1}{\sqrt{7-3x}}$

$$7-3x > 0 \quad \left| \begin{array}{l} -3x > -7 \\ \frac{-3x}{-3} > \frac{-7}{-3} \end{array} \right. \quad \text{or} \quad \boxed{(-\infty, 7/3)}$$

$$\boxed{x < 7/3}$$

2) Find  $\frac{f(x+\Delta x)-f(x)}{\Delta x}$  for  $f(x) = 5x^2$

$$f(x+\Delta x) = 5(x+\Delta x)^2$$

$$\frac{f(x+\Delta x)-f(x)}{\Delta x} = \frac{5(x+\Delta x)^2 - 5x^2}{\Delta x}$$

$$\frac{5(x+\Delta x)(x+\Delta x) - 5x^2}{\Delta x} = \frac{5x(10x+5\Delta x)}{\Delta x}$$

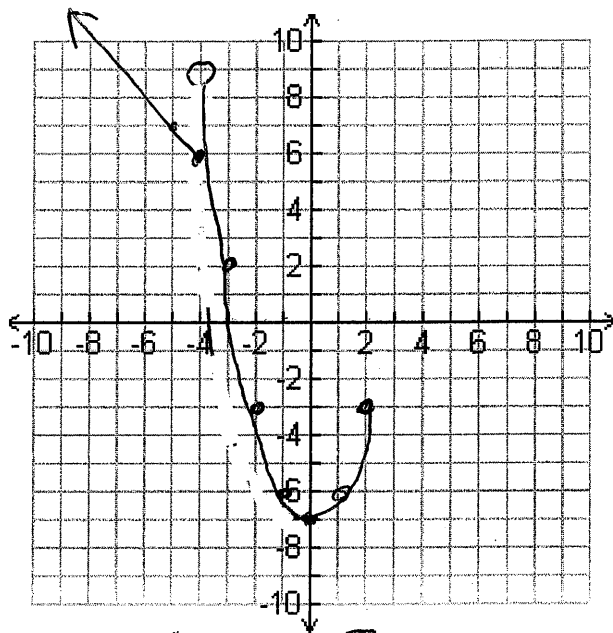
$$\frac{5(x^2+2x\Delta x+\Delta x^2) - 5x^2}{\Delta x} = \frac{5x^2+10x\Delta x+5\Delta x^2-5x^2}{\Delta x} = \boxed{10x+5\Delta x}$$

3) Graph the piecewise function and determine Domain and Range

$$f(x) = \begin{cases} 2-x, & x \leq -4 \\ x^2-7, & -4 < x \leq 2 \end{cases}$$

x	y
-4	6
-5	7
-6	8

x	y
-4	9
-3	2
-2	-3
-1	-6
0	-7
1	-6
2	-3



Domain:  $\underline{(-\infty, 2]}$

Range:  $\underline{[-7, +\infty)}$

4) Find the equation of line passing through  $(-2, -6)$  and perpendicular to  $5x + 7y = -17$

$$5x + 7y = -17$$

$$\frac{7y}{7} = \frac{-5x - 17}{7}$$

$$y = \frac{-5}{7}x - \frac{17}{7}$$

$$m_1 = -\frac{5}{7}$$

$$m_2 = \frac{7}{5}$$

point  $(-2, -6)$

$$y + 6 = \frac{7}{5}(x + 2)$$

5) Use the graph of  $f$  shown in the figure to sketch the graph of each function

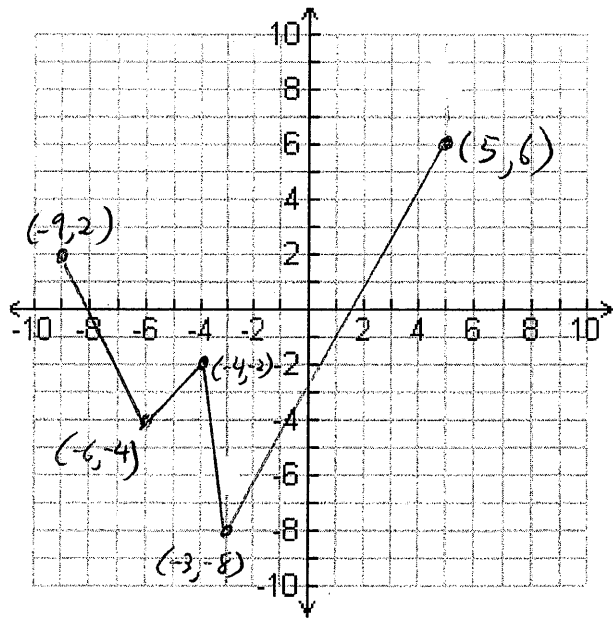
a)  $f(x-2) + 3$

right 2, up 3

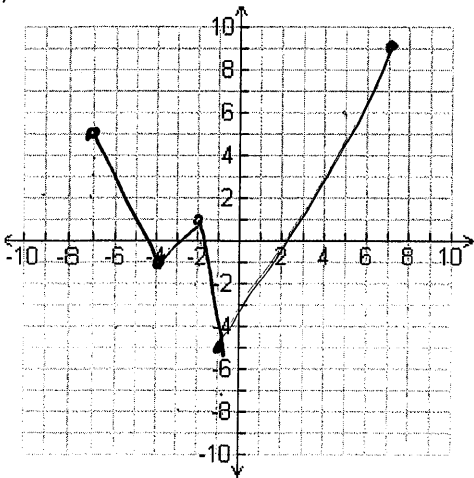
b)  $\frac{1}{2}f(x)$

vertical compression factor of  $\frac{1}{2}$

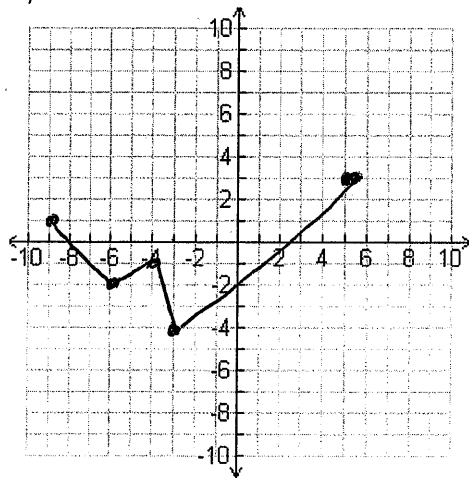
c)  $-f(x)$



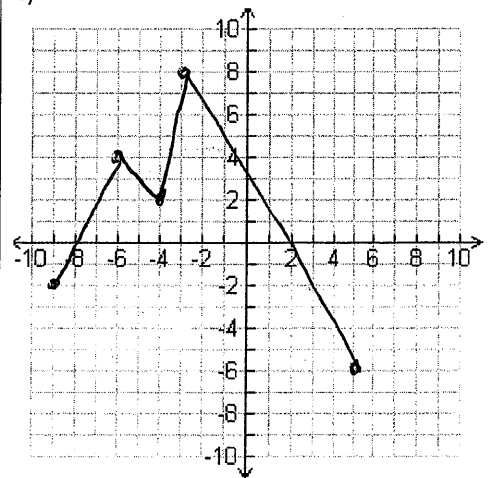
a)



b)



c)



6) Given  $f(x) = 3x^2 - 4x - 2$ , find a simplified expression to represent  $f(x-3) - f(x)$

$$3(x-3)^2 - 4(x-3) - 2 - (3x^2 - 4x - 2)$$

$$3(x-3)(x-3) - 4(x-3) - 2 - 3x^2 + 4x + 2$$

$$3(x^2 - 6x + 9) - 4x + 12 - 2 - 3x^2 + 4x + 2$$

$$\underline{3x^2 - 18x + 27} - \underline{4x + 12} - \underline{2} - \underline{3x^2} + \underline{4x} + \underline{2}$$

$$\boxed{-18x + 39}$$

7) Find all points of intersection (ordered pairs!) of the graphs of  $4x = y^2$  and  $y = 2x - 4$

$$4x = (2x - 4)^2$$

$$4x = (2x - 4)(2x - 4)$$

$$4x = 4x^2 - 16x + 16$$

$$0 = 4x^2 - 20x + 16$$

$$4x^2 - 20x + 16 = 0$$

$$4(x^2 - 5x + 4) = 0$$

$$4(x - 4)(x - 1) = 0$$

$$x = 1, 4$$

$$y(1) = 2(1) - 4 = -2$$

$$y(4) = 2(4) - 4 = 4$$

points:  
 $(1, -2)$  and  $(4, 4)$

8) Evaluate the function as indicated

$$f(x) = \begin{cases} 2 - x, & x < -6 \\ 5 - 3x, & -4 < x \leq 3 \\ 3 - x^2, & x > 3 \end{cases}$$

a)  $f(-10) = 2 - (-10) = \boxed{12}$

b)  $f(1) = 5 - 3(1) = \boxed{2}$

c)  $f(3) =$

$$5 - 3(3) = 5 - 9 = \boxed{-4}$$

d)  $f(t^2 + 4) =$

$$3 - (t^2 + 4)^2$$

$$3 - (t^4 + 8t^2 + 16)$$

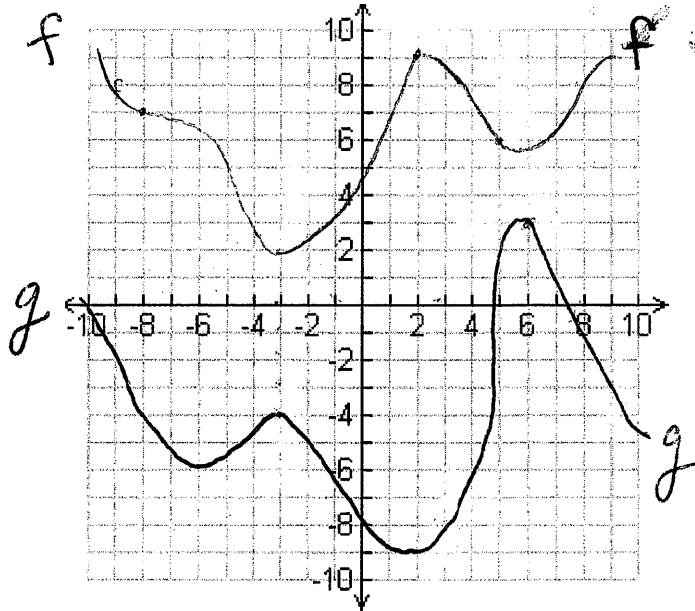
$$3 - t^4 - 8t^2 - 16$$

$$\boxed{-t^4 - 8t^2 - 13}$$

9)

**Evaluating Composite**

**Functions** Use the graphs of  $f$  and  $g$  to evaluate each expression. If the result is undefined, explain why.



(a)  $(f \circ g)(3)$      $f(g(3))$

$f(8) = \boxed{8}$

(b)  $g(f(2))$

$g(9) = \boxed{-3}$

(c)  $g(f(5))$

$g(6) = \boxed{3}$

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

$f(-4) = \boxed{3}$

10) Determine symmetry for equation: (y-axis, x-axis, origin, none)

$5xy^3 - 5x^5y^4 - 11y^2 + 13x = 0$

origin symmetry