

- 1) Given the line $y = -\frac{2}{3}x + 4$, write an equation in **point-slope form** for the line through (6,-1) that is
 - a) Parallel to the given line (2 pts)

b) Perpendicular to the given line (2 pts)

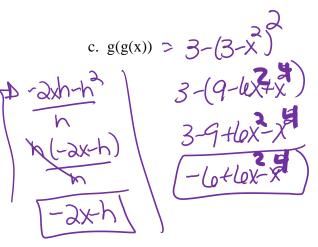
2) Write the equation of the line that is perpendicular to the x-axis and passes through the point (-4, 7)

3) Let f(x) = 2 - x and $g(x) = 3 - x^2$. Find the formula and simplify for:

a) $g(f(x))$
2 3- $(2-x)^{2}$
3-(4-4x+x ²)
`
3-4+4x-x2
-1+4x-x2

b.
$$\frac{g(x+h)-g(x)}{h}$$

 $\frac{3-(x+h)^2-(3-x^2)}{h}$
 $\frac{3-(x^2+2xh+h^2)-3+x^2}{h}$
 $\frac{3-(x^2+2xh+h^2)-3+x^2}{h}$



4) Use the table below to fill in the blanks.

X	f(x)	g(x)	h(x)
-1	3	0	-6
0	-2	3	1
1	8	2	-1
2	0	-3	5
3	1	2	0

a.
$$g(f(2)) = 3$$

b.
$$f(h(0)) = \frac{2}{f(I)}$$

c.
$$h(h(f(3))) = \underline{\qquad} \ell$$

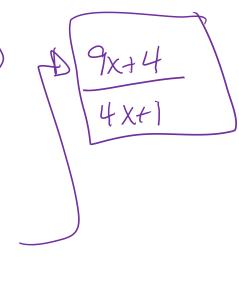
 $h(h(f))$
 $h(-f)$

5. Simplify:

a.
$$\frac{\left(3 - \frac{5}{x+1}\right)}{\left(4 + \frac{10}{x+1}\right)} \quad \underbrace{\left(\times + 1\right)}_{\left(\times + 1\right)}$$

$$\frac{3x+3+3}{4x+4+10}$$

b.
$$\frac{\left(4+\frac{x}{2x+1}\right)\left(2x+1\right)}{2-\frac{1}{2x+1}}\left(2x+1\right)$$



6. Determine if the function has a vertical and/or horizontal asymptotes and determine the equation of them.

a.
$$f(x) = \frac{3x-1}{3x^2 + 2x - 1}$$

$$= 3x-1$$
 $(3x-1)(x+1)$

b.
$$f(x) = \frac{5x^2}{3x^2 - x}$$

$$=\frac{5x^3}{x(3x-1)}$$

$$= \frac{5x}{(3x-1)}$$

c.
$$f(x) = \frac{4x^2 - 1}{x - 1}$$