MATH 30 - Precalculus. Homework 1. Due Th. 02/07/2019. Professor Luis Fernández

If you hand it in, please use this sheet for your graphs or short answers; **STAPLE** any additional sheets.

1. For the function $f(x) = 3x - 5$, find (and simplify when possible)

a) $f(3) =$ **b)** $f(-4) =$ **c)** $f(t) =$

d) $f(x+1) =$ **e)** $f(-x) =$ **f)** $f(x^2) =$

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2. For the function $f(x) = \dfrac{3x^2 - 1}{x^2}$, find (and simplify when possible)

a) $f(2) =$ **b)** $f(-1) =$ **c)** $f(r) =$

d) $f(x-1) =$ **e)** $f(-x) =$ **f)** $f(x^3) =$

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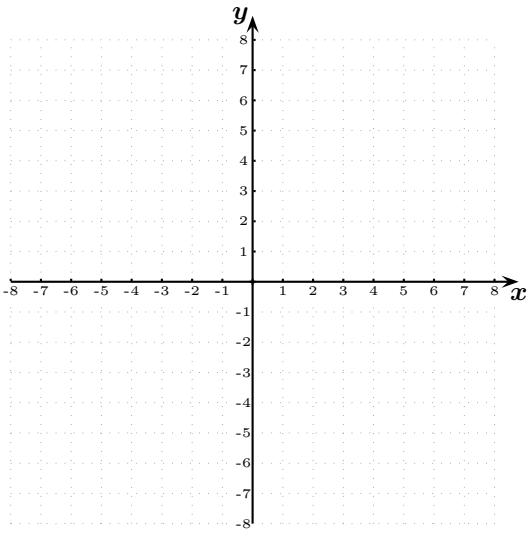
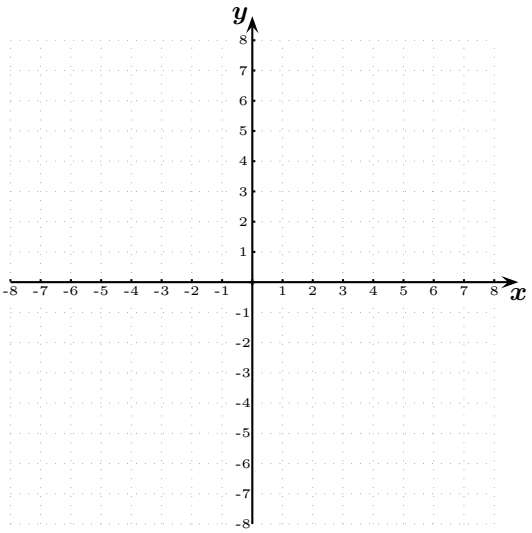
3. Make a table of values (take, for example, the integers between -6 and 6; you may want to use a calculator) and graph the following functions in the axes provided.

a) $f(x) = \sqrt{x+3}$



b) $g(x) = |x|$

(remember that $|x|$ means 'absolute value of x')



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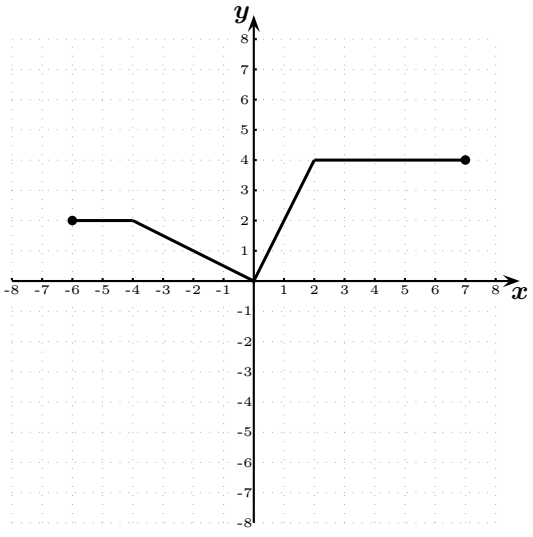
4. Use the given graph of the function g to answer the questions below.



a) Find $g(-2) =$ **b)** Find $g(0) =$

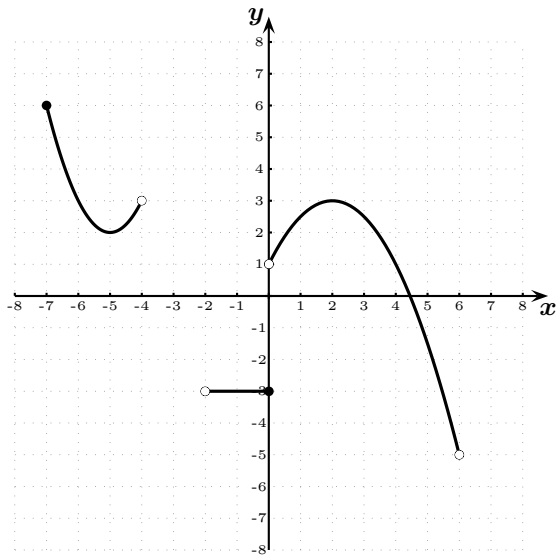
c) Find $g(1) =$ **d)** Find $g(-3) =$

e) Find $g(4) =$ **f)** Find $g(7) =$

g) Find the domain of g and write it in interval notation.

h) Find the range of g and write it in interval notation.

5. Use the graph of the function f given below to find



a) The domain of f.

b) The range of f.

c) The interval(s) where f is increasing.

d) The interval(s) where f is decreasing.

e) The interval(s) where f is constant.

f) The relative maxima of f.

g) The relative minima of f.

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6. For the function $f(x) = x^2 - x + 1$, find and simplify the difference quotient $f(x) = \dfrac{f(x+h) - f(x)}{h}$.

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7. Use the following procedure to determine whether the functions below are even, odd or neither:

To find whether the function f is even, odd, or neither,

1. Find $f(-x)$ and simplify it (remember that, for example, $(-x)^2 = x^2$, and $(-x)^3 = -x^3$).
2. Compare $f(-x)$ with $f(x)$:

- If $f(-x) = f(x)$ then the function is even.
- If $f(-x) = -f(x)$ then the function is odd.
- If none of the above, the function is neither (most functions are neither).

a) $f(x) = x^2 + 4$.

b) $g(x) = \dfrac{x^3}{x^2 + 4}$.

c) $h(x) = x^2 + x$.

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8. Convert from radians to degrees.

a) $\dfrac{\pi}{3} =$ **b)** $\dfrac{5\pi}{4} =$

c) $\dfrac{5\pi}{6} =$ **d)** $3 =$

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9. Convert from degrees to radians.

a) $300° =$ **b)** $135° =$