

PC-1st Semester Final Review (Extra Practice Problems)

1) Algebraically find the domain of the following functions.

a) $h(x) = \frac{3x}{x^2 - 144}$

b) $f(x) = \frac{4}{x^2 - 19x}$

c) $g(x) = \sqrt{21x + 7}$

2) Find the domain of the function.

$$m(x) = \log_4(x + 50)$$

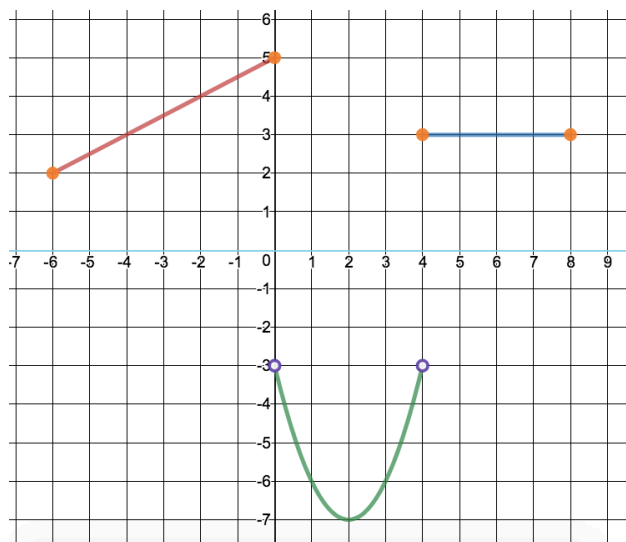
3) Find the domain of the function.

$$n(x) = \log(12x - 5)$$

4) Find the domain of the function.

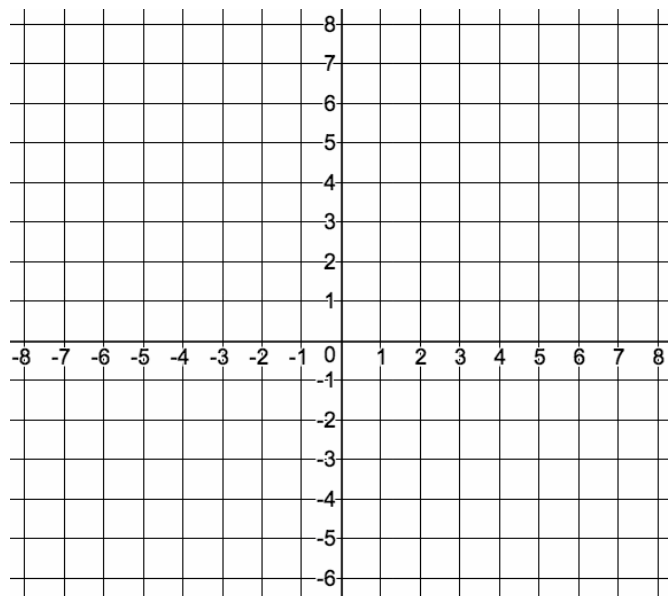
$$y = 5^x$$

5) Write the definition for the piecewise function.



6) For the function find the:

$$f(x) = \begin{cases} -x + 3 & \text{if } -2 \leq x < 0 \\ 4 & \text{if } x = 0 \\ (x - 2)^2 & \text{if } x > 0 \end{cases}$$



7) Determine algebraically if the function is even, odd, or neither.

$$f(x) = x^5 + x^3$$

8) Determine algebraically if the function is even, odd, or neither.

$$h(x) = \frac{2x}{x^2 + 5}$$

Use the graph to the right to answer the following:

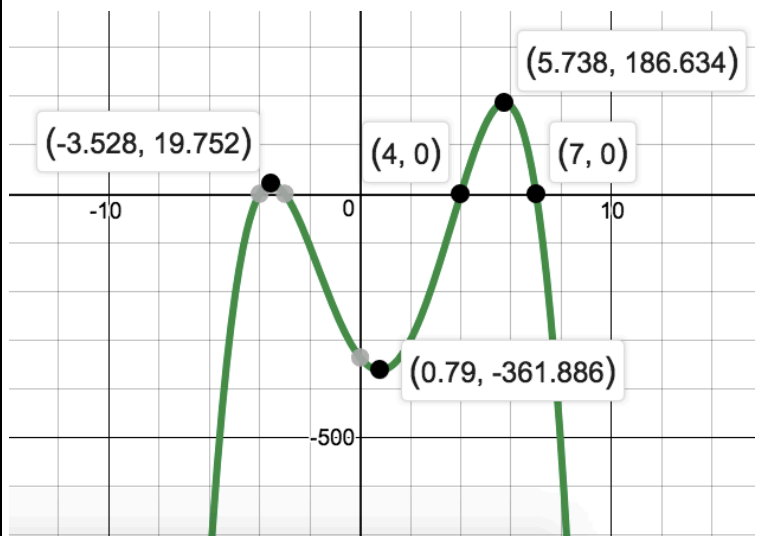
9) Identify the following (if present)

Local Maximum:

Local Minimum:

10) Identify intervals for which the graph is increasing/decreasing.

11) Identify intervals for which the graph is concave up/down.



12) Find the Domain:

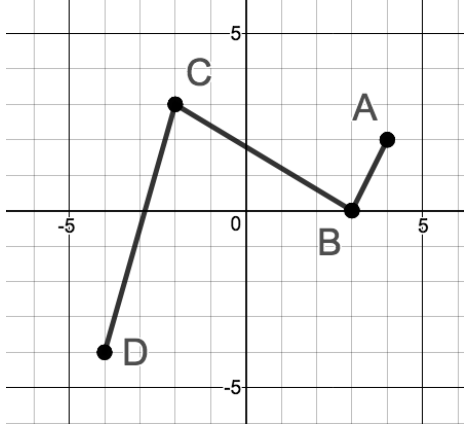
13) Find the Range:

14) Point $A(-9,25)$ is on the graph of $y = f(x)$. Determine the location of point A' after the transformation shown. Describe the transformation steps in detail (use words).

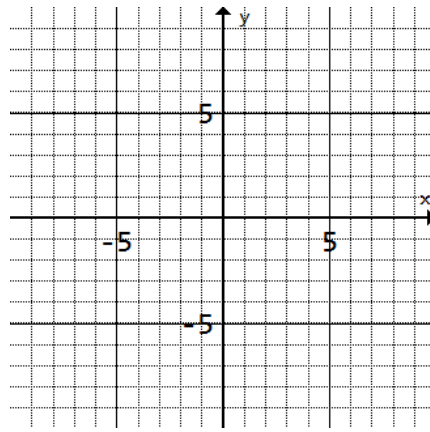
a) $\frac{1}{5}f(-3(x-7))$

b) $5f\left(\frac{1}{3}(x)\right) - 8$

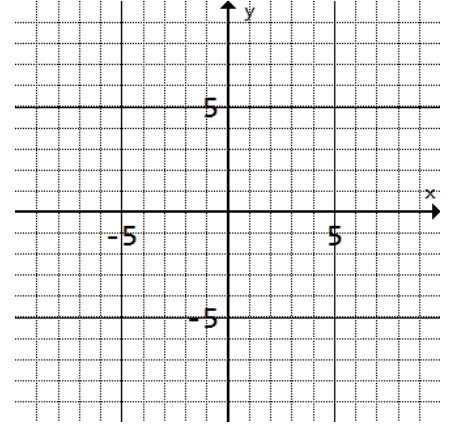
$h(x)$ is below (#4,#5: 5 pts each)



15) Graph $h(-\frac{1}{2}(x+1))$



16) Graph $-2h(x-4) - 2$



17) Let $n(x) = \frac{4x-7}{8x+2}$ Algebraically determine $n^{-1}(x)$.

18) Consider the polynomial function f with a root of $3i$. Find and list all roots.

$$f(x) = x^4 + 4x^3 + 13x^2 + 36x + 36$$

19) Given a polynomial with the roots shown below, write a possible polynomial in standard form.

$$x = \{3, 5 + 2i, 5 - 2i\}$$

20) Given $R(x) = \frac{3(x-10)(x+2)}{x^2-2x-24}$, find the following. If none, write 'none'.

a) x-intercept(s)

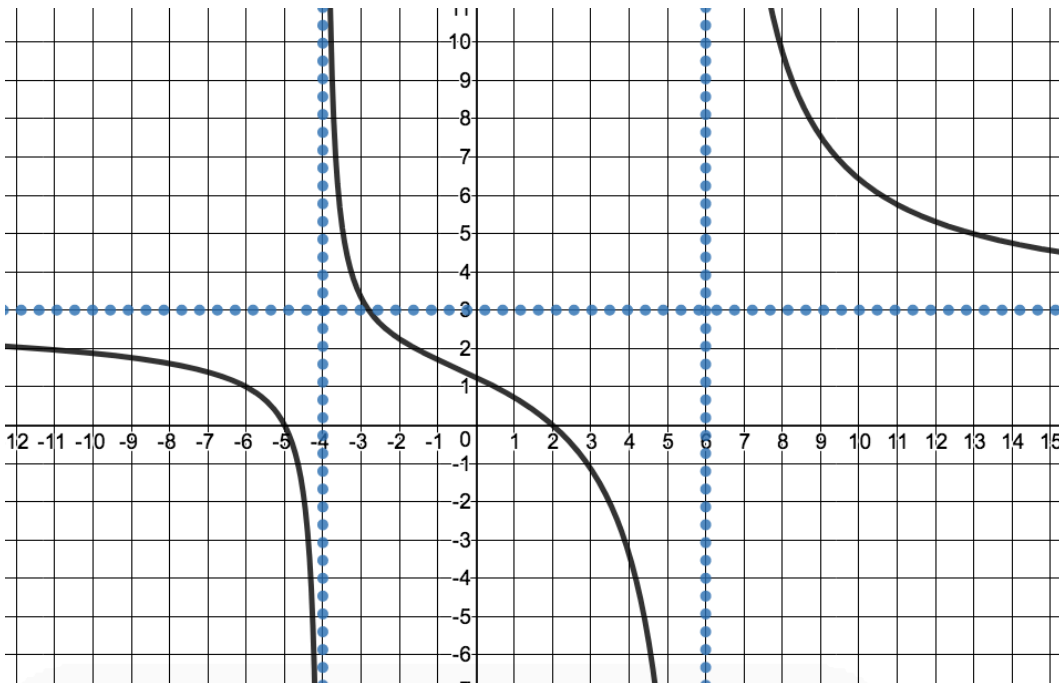
b) y-intercept(s)

c) vertical asymptote(s)

d) Horizontal asymptote

e) Oblique Asymptote

21) Write a possible equation for the graph below. (5 pts)



22) Solve for x.

$$5^{x+9} = 625^{4x}$$

23) Solve for x.

$$\log(2x) + \log(x + 1) = \log(12)$$

24) Solve for x.

$$\log_7(x) + \log_7(3x - 14) = 2$$

25) Alex deposits \$14,322 into an account with a 2.6% interest rate compounded monthly. When will he have \$22,000? Solve algebraically.

26) An element, Jamiesonian – 33 , has a half-life of 3220 years. If there are 555 grams of this element to start, how long until only 230 grams remain?