

## MATH 1310 Review for Test -4

Where: CASA Testing Center

Time: 50 minutes

Number of questions: ??

? Multiple Choice Questions (total of ?? pts )

? Free Response Question (total of ?? pts)

What is covered: **Chapter 4, Sections 5.1 – 5.3**

Do not forget to reserve a seat for Test – 4!

**Take practice Test – 4!** 10% of your best score will be added to your test grade at the end of the semester.

For the free response part, please show your work neatly. Do not skip steps.

**Remember the make-up policy: No make-ups!**

1) Find the y-intercept of the function

a)  $f(x) = (x^2 - 4x - 5)(x - 2)^2$

b)  $f(x) = x^3 + 6x^2 + 8x$

2) Find the zeros of the polynomial:  $P(x) = (x - 6)^3(x^2 - 2x - 8)$

3) Find the zeroes (may be complex) of the polynomial

a)  $P(x) = x^2 + 64$

b)  $f(x) = x^3 - 5x^2 + 16x - 80$

4) Find a 3<sup>rd</sup> degree polynomial with integer coefficients with zeroes 5 and  $2i$ , and constant coefficient 40.

5) Find the quotient and remainder:  $\frac{x^3 - 4x + 1}{x + 5}$

6) Find the quotient and remainder:  $\frac{7x^2 - 16x + 6}{7x - 2}$

7) Find the x- and y-intercepts of the function  $f(x) = \frac{x + 5}{x^2 - 1}$

8) Given the following function, find any holes, vertical asymptotes, horizontal asymptotes.

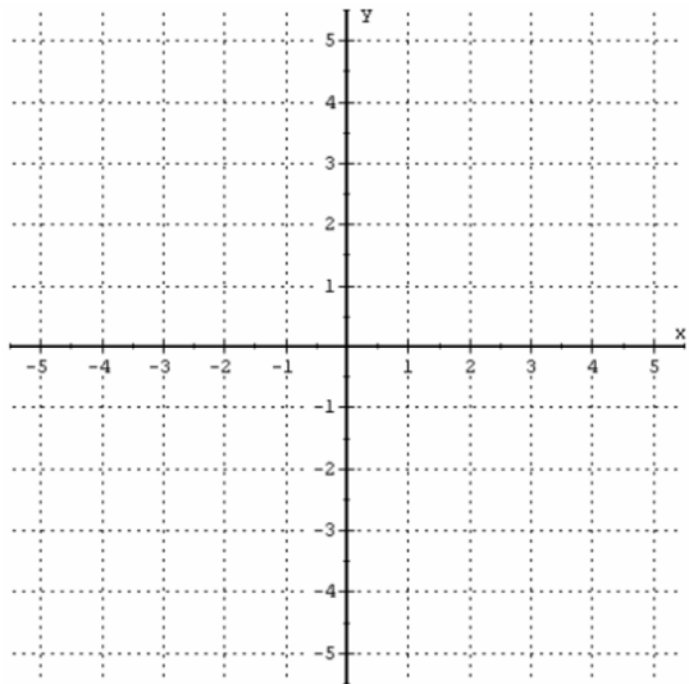
a)  $f(x) = \frac{x^2 + 10x + 25}{x^2 + 6x + 5}$

b)  $f(x) = \frac{x^2 - 2x - 8}{x - 4}$

c)  $f(x) = \frac{x^2 + 2x}{9x^2 - 36}$

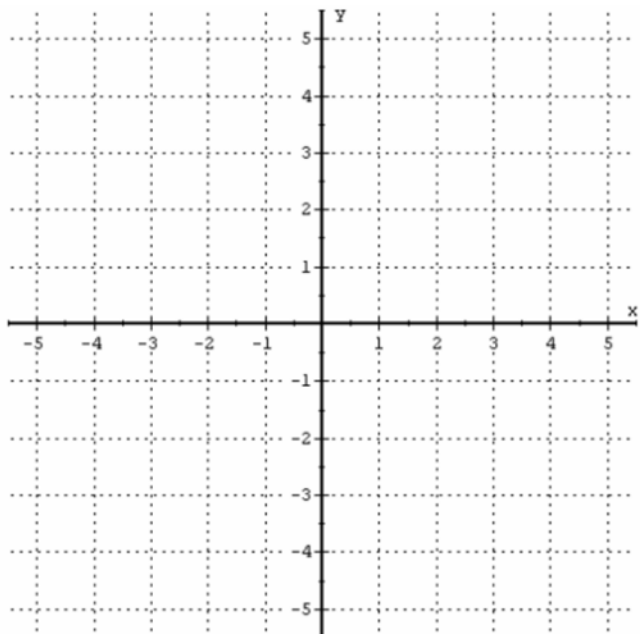
9) Graph the function  $P(x) = (x+2)^2(x-3)$ .

On your graph: Clearly label the  $x$ -intercept(s) and  $y$ -intercept. Show the correct end behavior and the correct behavior at each  $x$ -intercept.



10) Graph the function  $f(x) = \frac{x-4}{x+2}$ .

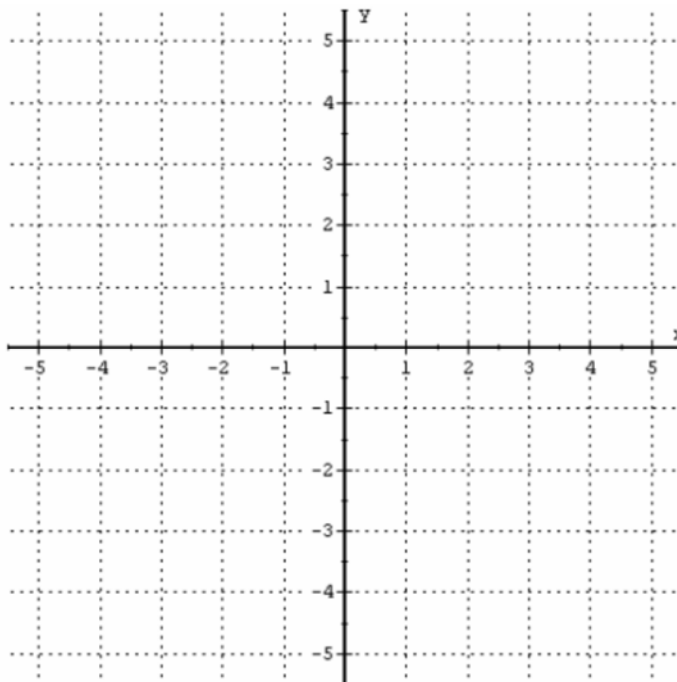
State the  $x$ -intercept(s),  $y$ -intercept, horizontal asymptote, vertical asymptote(s) and holes and clearly show these features on your graph.



**Exercise:** Graph the following functions:

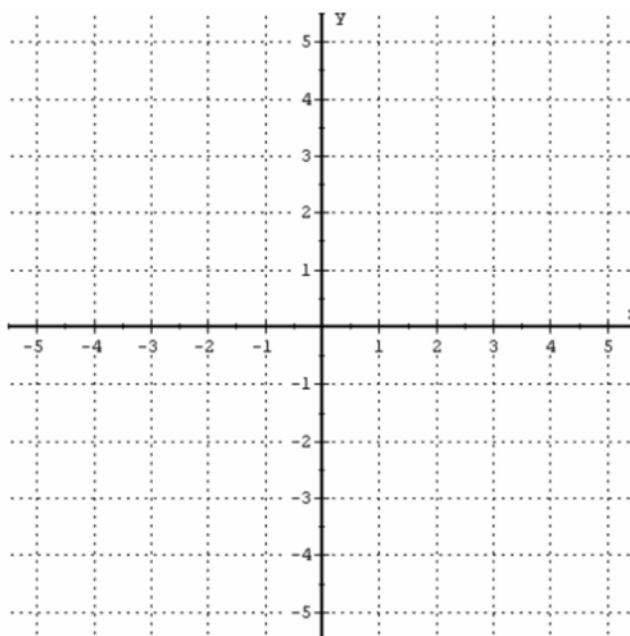
$$P(x) = (x - 4)^2(x + 3).$$

On your graph: Clearly label the  $x$ -intercept(s) and  $y$ -intercept. Show the correct end behavior and the correct behavior at each  $x$ -intercept.



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

State the  $x$ -intercept(s),  $y$ -intercept, horizontal asymptote, vertical asymptote(s) and holes and clearly show these features on your graph.



11) Evaluate the logarithmic function if it is defined. If not defined, say undefined.

$$\log_3(27)$$

$$\log_6(6^7)$$

$$e^{\ln(32)}$$

$$\log_2\left(\frac{1}{16}\right)$$

$$\ln(-2)$$

$$\log_{16} 1$$

12) Find the value of  $x$  given that

a)  $\log_7(x) = 0$

b)  $\log_4(x) = 1$

c)  $\log_2(x) = 4$

d)  $\log_5(x - 2) = 2$

13) Find the domain and range of

a)  $f(x) = \log_2(x) + 9$

b)  $f(x) = \log_5(2 - 4x)$

14) Solve for x, given that

a)  $2^x = 7$

b)  $4^{x-1} = 5$

15) Given the function  $g(x) = 5^{x-2} - 4$ , find

Domain \_\_\_\_\_

Range \_\_\_\_\_

y-intercept \_\_\_\_\_

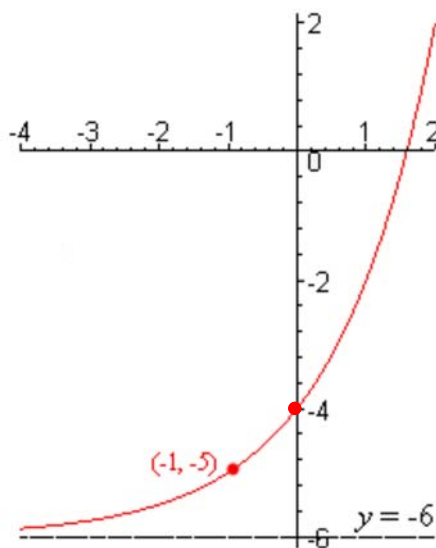
Asymptote \_\_\_\_\_

New Key Point – Shifted (0,1) \_\_\_\_\_

16) Write the exponential function of the form  $f(x) = a^x$  which passes through the points (0,1) and (3,64).

17) Write the exponential function whose graph is given below:

- A)  $2^{x+1} + 6$
- B)  $2^{x-1} + 6$
- C)  $2^{x+1} - 6$
- D)  $2^{x-6} + 1$
- E)  $2^{x+6} - 1$



18) Write in logarithmic form:

$$6^2 = 36$$

$$5^x = 2$$

19) Write in exponential form:  $\log_3(x) = 2$

20) Write the following logarithm as a sum of logarithms with no products, powers or quotients.

$$\ln\left(\frac{x^2(x-2)}{(x+1)^3(x+4)}\right)$$



21) Write the following expressions as a single logarithm:

$$2\ln(x) - 5\ln(x + 1)$$