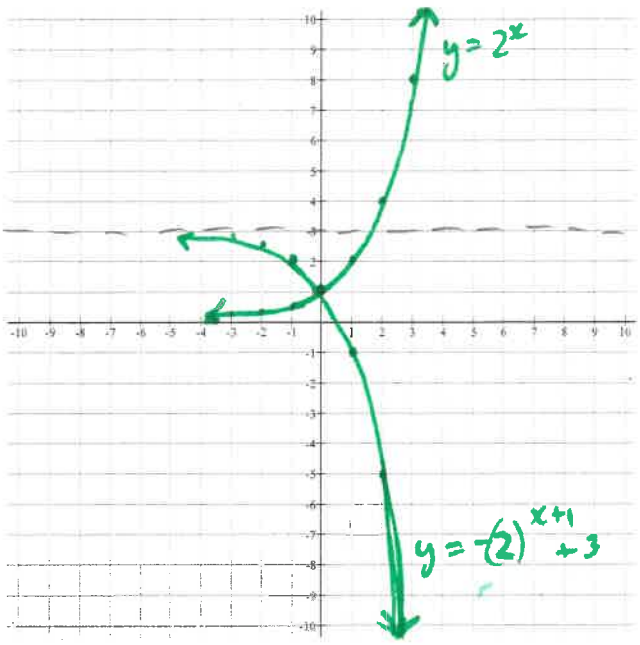
PREC12 /20 Name KEY

Quiz7.1/7.2(S) NO CALCULATORS

1. Sketch each graph:

a) $y = 2^x$ (2 mark)

-3	1/8
-2	1/4
-1	1/2
0	1
1	2
2	4
3	8



b) $y = -(2)^{x+1} + 3$ (3 marks)

x	-y+3
-4	
-3	2.75
-2	5/2 = 2.5
-1	2
0	1
1	-1
2	-5

2. For each exponential function state the domain & range (in set notation) and the equation of the horizontal asymptote. (2 marks each)

a) $y = -3\left(\frac{1}{4}\right)^{3x-2}$

$D\{x \mid x \in \mathbb{R}\}$

$R\{y \mid y < 0, y \in \mathbb{R}\}$

$y = 0$

b) $y = 2(5)^{4-2x} + 1$

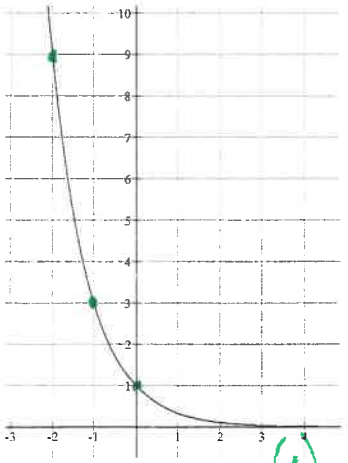
$D\{x \mid x \in \mathbb{R}\}$

$R\{y \mid y > 1, y \in \mathbb{R}\}$

$y = 1$

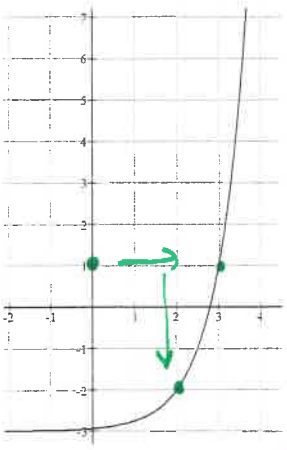
3. Write the equation for each exponential function shown.

a) (2 marks)



$y = \left(\frac{1}{3}\right)^x$

b) (3 marks)



$y = 4^{x-2} - 3$

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4. The population of a bacterial culture is modeled by the function $P(t) = 6400(0.25)^{t/3}$ where P is the number of bacteria at time t hours.

a) What is the initial population? Is the population increasing or decreasing? Explain. (2 marks)

6400 decreasing because base between 0 + 1 /2

b) By what percent is the population changing? How long does it take for this change to occur? (2 marks)

Dropping 75% every 3 hours /2

c) What will the population be after 9 hours? Show your work. (2 marks)

$= 6400\left(\frac{1}{4}\right)^{3\text{ of }3}$ /2

$= 6400\left(\frac{1}{64}\right)$

$=$ 100 bacteria

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