1. Convert 
$$9^{2x+3} \div 27^{3x-1} \times 81^{x-1}$$
 to base 3 and simplify it.

2. Solve for x: a) 
$$3^{5x-1} = 81^{3x}$$
 b)  $27^{x-2} = \frac{1}{81^{x+3}}$ 

c) 
$$\left(\frac{125}{216}\right)^{\frac{-x}{4}} = \left(\frac{6}{5}\right)^{3x-3}$$

- 3. How much money will you have in 5 years if you invested \$3000 compounded monthly at 2.5%?
- 4. The number of fish in a lake is decreasing by 5% each year as a result of overfishing. If there were 2500 fish in January 2019, how many years, to the nearest tenth, would it take for the fish population to reduce to half?
- 5. Draw the graph of  $f(x) = -3(5^{-x-2}) 1$  and determine its intercepts, domain and range and equation of the asymptote.

## Answer:

1. 
$$3^{-x+5}$$

2. A) 
$$x = -\frac{1}{7}$$
, b)  $x = -\frac{6}{7}$ , c)  $x = \frac{4}{3}$ 

- 3. \$3399.00
- 4. 13.5 years
- 5. Y-int: (0, -1.12), Domain:  $x \in R$ , Range: y < -1, asymptote: y = -1

Χ	Υ
-1	1
	<u>5</u>
0	1
1	5



X'	Y'
-1	-1.6
-2	-4
-3	-16