Mathematics 3200 Name: \_\_\_\_\_\_\_\_\_\_\_\_

Unit Test: Exponential Functions Date: \_\_\_\_\_\_\_\_\_\_\_\_\_

***Section A:*** **Selected Response**: Place the letter of your response in the space at the right.
 [13 points]

1. Which function of the form  represents the graph shown below? 1.\_\_\_\_

A)  B) 

C)  D) 

2. What is the *y*-intercept of the function ? 2.\_\_\_\_

A)  B) 

C)  D) 

3. What is the range of the exponential function ? 3.\_\_\_\_

A)  B) 

C)  D) 

4. Which transformations of produces the function ? 4.\_\_\_\_

A) horizontal translation 1 unit right, horizontal stretch factor 

B) horizontal translation 1 unit right, horizontal stretch factor 

C) horizontal translation 5 unit right, horizontal stretch factor 

D) horizontal translation 5 unit right, horizontal stretch factor 5

5. What is the equation of the image of under the mapping rule 5.\_\_\_\_
 .

A) 
B) 
C) 
D) 

6. The function describes the relationship between the
 temperature, T of a cup of hot chocolate and time, t. What would be the
 temperature of the hot chocolate after 10 seconds? 6.\_\_\_\_

A)  B) 

C)  D) 

7. Which function best represents the graph shown? 7.\_\_\_\_

A) 
B) 
C) 
D) 

8. Which graph below represents an exponential function of the form
 where ? 8.\_\_\_\_



A) B)



C) D)

9. Simplify:  9.\_\_\_\_

A)  B) 

C)  D) 

10. Solve for *x*:  10.\_\_\_

A) 

B) 

C) 

D) 

11. Solve for *x:*  11.\_\_\_

A) 

B) 

C) 

D) 

12. Solve for *x*:  12.\_\_\_

A) 

B) 

C) 

D) 

13. Mary bought a new car for $28 000 that depreciates by 8% per year.
 Which function models the value, *V*, of the car after *t* years? 13.\_\_\_

A) 
B) 
C) 
D) 

***Section B:*** **Constructed Response**. Be sure to show all workings in order to receive full marks.
 [15 points]

14. Sketch and label the graph of the function .

State the mapping rule and identify the domain, range and the equation
of the horizontal asymptote. (5 marks)



Mapping Rule:

Domain:\_\_\_\_\_\_\_\_\_\_

Range:\_\_\_\_\_\_\_\_\_\_\_

Equation of the Horizontal Asymptote:\_\_\_\_\_\_\_\_\_\_\_\_\_

15. Solve for x:  (3 marks)

16. Show:  (3 marks)

17. The chemical element strontium has a half-life of 25 years. If 16g were present initially, how
 long will it take for the amount to be reduced to 2g? Show algebraically.
  (4 marks)