

## Final Exam

Date \_\_\_\_\_ Period \_\_\_\_\_

**Solve each equation.**

1)  $-7(k - 7) = 105$

- A)  $\{-5\}$       B)  $\{13\}$   
 C)  $\{-8\}$       D)  $\{4\}$

2)  $1 - 2(6p + 2) = 81$

- A)  $\{-7\}$       B)  $\{6\}$   
 C) No solution.      D)  $\{0\}$

3)  $2(k + 3) - 2(4 + k) = 4 + 6k - 3k$

- A)  $\{-2\}$       B)  $\{8\}$   
 C)  $\{-13\}$       D)  $\{-6\}$

4)  $2(k - 1) = -7(5k - 5)$

- A)  $\{13\}$       B)  $\{3\}$   
 C)  $\{1\}$       D)  $\{-2\}$

**Factor the GCF out of the expression.**

5)  $-15p^3 + 3p^5$

- A)  $9p^3(-5p + p^2)$   
 B)  $3p^3(-5 + p^2)$   
 C)  $3p^3(-5p + 4p^2)$   
 D)  $15p^3(-5 + p^2)$

6)  $48k^7 + 8$

- A)  $8k(6k^6 + 1)$   
 B)  $8(6k^7 + 1)$   
 C)  $2(2k^6 + 1)$   
 D)  $16(18k^7 + 1)$

**Solve each equation by factoring.**

7)  $n^2 - 3n - 28 = 0$

- A)  $\{7, -4\}$       B)  $\{-7, 4\}$   
 C)  $\{1, 4\}$       D)  $\{-5, -2\}$

8)  $n^2 - 5n = 0$

- A)  $\{5, -8\}$       B)  $\{1, 0\}$   
 C)  $\{5, 0\}$       D)  $\{5, 7\}$

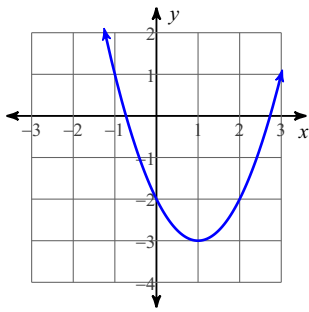
9)  $3x^2 - 14x - 24 = 0$

- A)  $\left\{-\frac{4}{3}, 6\right\}$       B)  $\left\{\frac{6}{5}, -\frac{8}{7}\right\}$   
 C)  $\left\{-\frac{2}{3}, -8\right\}$       D)  $\left\{\frac{2}{7}, -7\right\}$

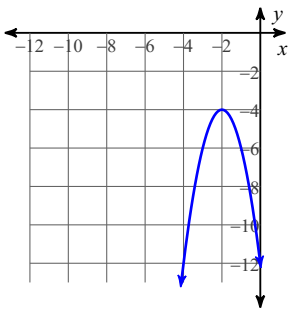
Sketch the graph of each function.

10)  $y = -2(x + 2)^2 - 4$

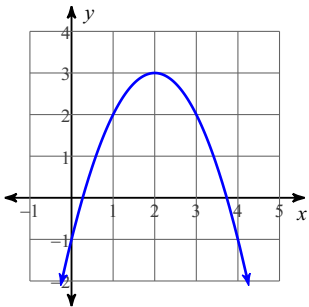
A)



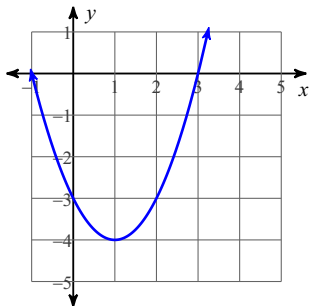
B)



C)

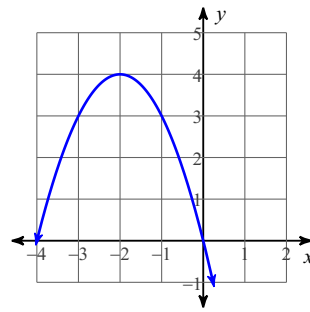


D)

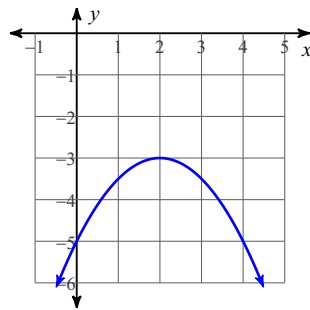


11)  $y = (x - 3)^2 + 2$

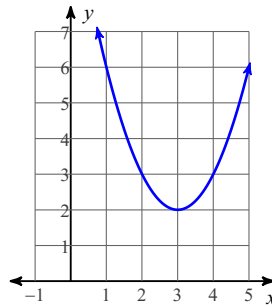
A)



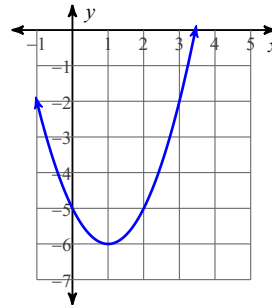
B)



C)



D)



Using the equation of the exponential function given, answer the following questions:

$$y = 5 \cdot \left(\frac{1}{2}\right)^{x+2} - 3$$

12) What type of exponential function is given above?

- A) This is an exponential decay function, because the  $b$  value is greater than 1.
- B) This is an exponential growth function, because the  $b$  value is less than 1.
- C) This is an exponential decay function, because the  $b$  value is less than 1.
- D) This is an exponential growth function, because the  $b$  value is greater than 1.

13) How does this function shift vertically?

- A) up 2
- B) up 3
- C) down 3
- D) down 2

14) How does this function move horizontally?

- A) left 2
- B) right 3
- C) left 2
- D) left 3

15) How does this function move horizontally?

- A) right 2
- B) left 3
- C) right 3
- D) left 2

Given the equation  $y = 50 \cdot 1.15^x$ :

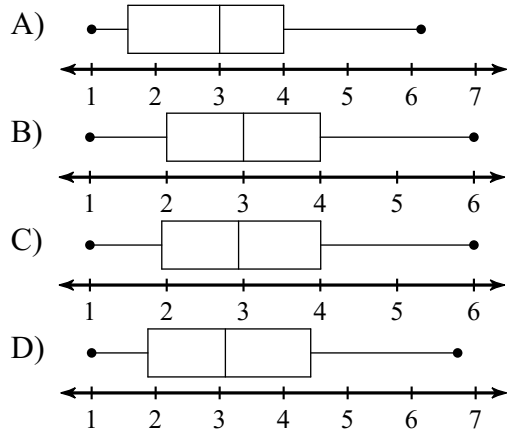
16) What is the initial value?

17) What is the exponential rate of change?

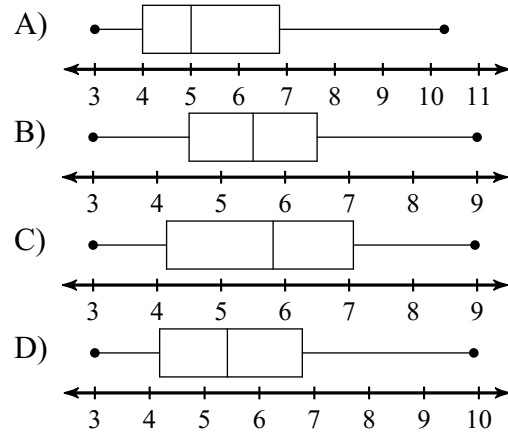
- A) 15% increase
- B) 15% decrease
- C) 50% decrease
- D) 50% increase

Draw a box-and-whisker plot for each data set.

18) # Words in Book Titles  
 4 2 4 2 3 2 4 2  
 1 2 3 3 3 6 1 5

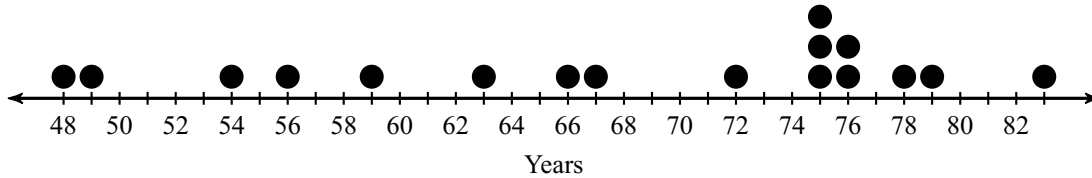


19) Goals in a Hockey Game  
 3 6 6 5 5 4 6 3  
 7 5 3 9 7 7 5 6



Find the median and mean for each data set.

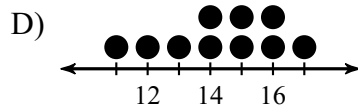
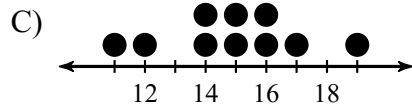
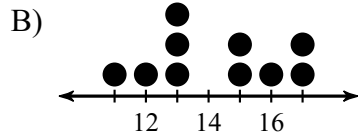
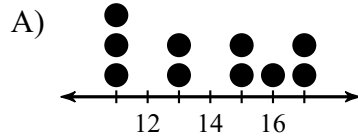
20) Life Expectancy by Country



- A) Median = 70.5 and Mean = 68.62      B) Median = 72 and Mean = 67.71  
 C) Median = 74.5 and Mean = 70.28      D) Median = 74.5 and Mean = 71.56

**Draw a dot plot for each data set.**

- 21) Age at First Job  
 11 12 13 13 13 15 15  
 16 17 17



- 22) Which lists four consecutive terms of an arithmetic sequence?

- A) 1, 2, 4, 8      B) 3, 10, 17, 24  
 C) 1, 4, 9, 16      D) -5, 6, 10, 13

- 23) What is the common ratio of the geometric sequence shown below?

6, -24, 96, -384, 1536 ...

- A)  $\frac{1}{4}$       B) -4  
 C) 4      D)  $-\frac{1}{4}$

- 24) What is the standard form of the following equation:

$$y = 2(x - 1)^2 + 4$$

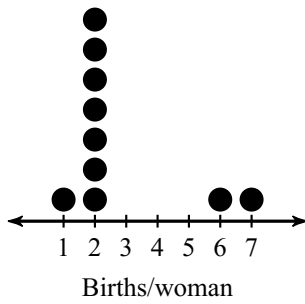
- A)  $y = 2x^2 - 4x + 6$   
 B)  $y = 2x^2 - 4x + 8$   
 C)  $y = 2x^2 - 2x + 4$   
 D)  $y = 2x^2 + 4$

- 25) Write a function that represents the parent function  $y = x^2$  after it has been translated 3 up and 2 right.

- A)  $y = (x - 2)^2 + 3$       B)  $y = (x + 2)^2 - 3$   
 C)  $y = (x - 3)^2 + 2$       D)  $y = (x + 3)^2 - 2$

Find the mean and interquartile range for each data set.

26) Birth Rate by Country



- A) Mean = 2.8 and IQR = 0
- B) Mean = 3.15 and IQR = 1.86
- C) Mean = 2.81 and IQR = 2.67
- D) Mean = 2.78 and IQR = 2.67