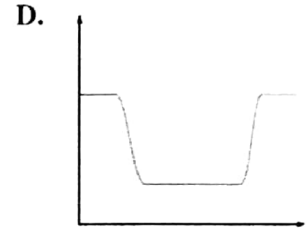
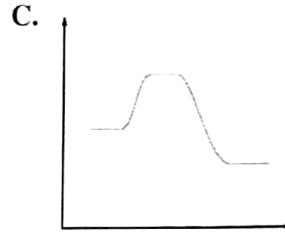
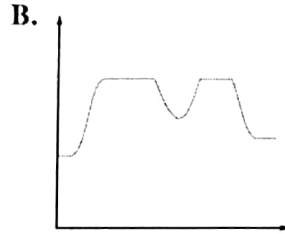
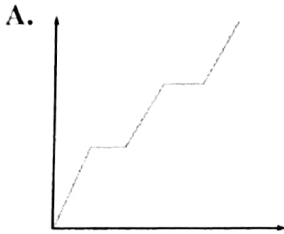


### Unit 7 Quiz #1 Review

For #1-4, match each situation to its corresponding graph.



1. A restaurant was busy during lunch hours but very slow for dinner C
2. Luke took 2 breaks at the rest area during his drive from Charleston to Atlanta A
3. Allen's heartrate was very high during the basketball game but closer to its regular rate during halftime and after he fouled out of the game B
4. The price of summer clothing drastically dropped around fall and winter season but went back around spring D

5. The table and graph below shows the average amount of points two different football teams have after the end of each quarter. According to the data, which of the following are true? (There may be more than one correct answer)

A. Clemson is expected to win the game

*True*

B. NC State is expected to score more points than Clemson during the 2<sup>nd</sup> quarter

*False*

D. Clemson never trails NC State at the end of each quarter

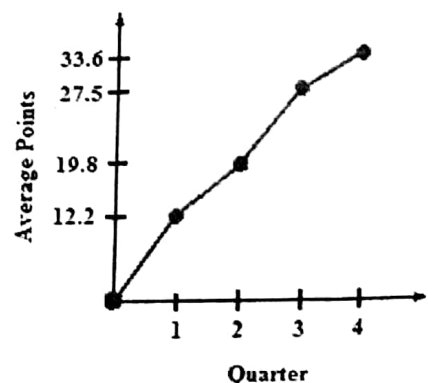
*False*

C. NC State averages 14.2 points during the second half of the game

*False*

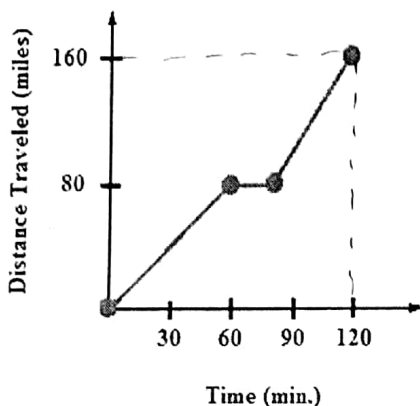
Clemson Tigers	
Quarter	Average Points
0	0
1	11.9
2	23.1
3	30.0
4	37.3

NC State Wolfpack



6. The following graph describes the trip from Charleston to Florence using the AMTRAK train. Find the average speed of the train during the trip. Notice that the train stops at Kingstree before arriving at Florence.

AMTRAK Train



$(0,0)$   $(120,160)$

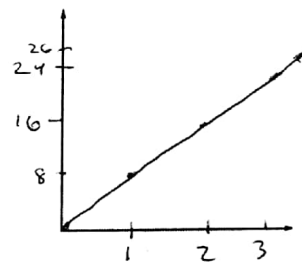
$$= \frac{\Delta y}{\Delta x} = \frac{160-0}{120-0} = \frac{160}{120} = \frac{4}{3} = 1\frac{1}{3} \text{ miles/min}$$

7. Mrs. Smith is running a full marathon which is approximately 26 miles long. During the race, she averaged a pace of 8 miles per hour. Create a table and equation to represent Mrs. Smith's distance to the finish line with relation to time. When is she expected to finish the race?

Table:

Time (hrs.)	0 hrs	1 hr	2 hrs	3 hrs
Distance (miles)	0 mi	8 mi	16 mi	24 mi

Graph:



$$26 = 8t$$

$$t = \frac{26}{8} = 3\frac{1}{4}$$

Equation:  $D(t) = 8t$

Answer:  $3\frac{1}{4}$  hrs or 3 hrs 15 min

8. In insurance policy, the deductible is the amount of money that has to be paid out of pocket by the person covered under the insurance. The following piecewise function models a certain medical insurance policy, where  $x$  is the amount of the medical bill, and  $f(x)$  is the amount of deductible. Write a verbal description of the amount of deductible the person has to pay if their medical bill was \$100, \$1200, and \$1800.

$$f(x) = \begin{cases} x & 0 < x \leq 250 \\ \frac{1}{4}x & 250 < x \leq 1500 \\ \frac{1}{3}x & 1500 < x \end{cases}$$

\$100: A person with a medical bill of \$100 will pay the full bill.

\$1200: A person with a medical bill of \$1200 will pay a quarter of the amount.

For #9 and #10, evaluate each piecewise function for  $x = -3$ ,  $x = 1$ , and  $x = 4$ .

$$9. f(x) = \begin{cases} 5 & x \leq -1 \\ -2 & -1 < x < 4 \\ -x + 3 & x \geq 4 \end{cases}$$

$$f(-3) = 5$$

$$f(4) = -(4) + 3 = -1$$

$$f(1) = -2$$

$$10. f(x) = \begin{cases} x - 9 & x < -3 \\ -2x + 7 & -3 \leq x \leq 2 \\ -x^2 & x > 2 \end{cases}$$

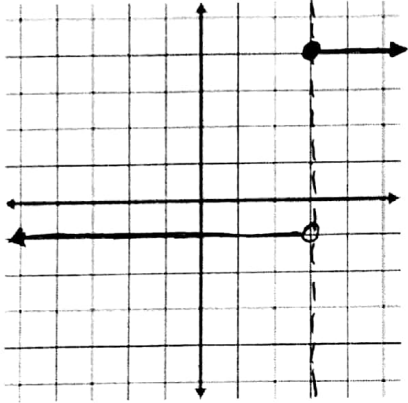
$$f(-3) = -2(-3) + 7 = 13$$

$$f(1) = -2(1) + 7 = 5$$

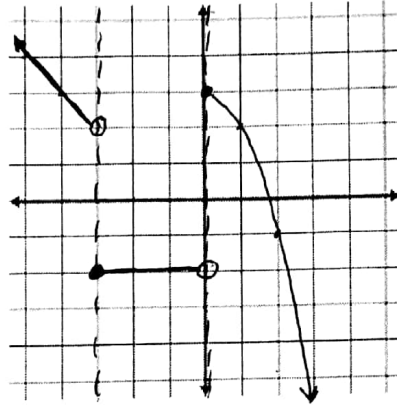
$$f(4) = -(4)^2 = -16$$

For #11 and #12, graph each piecewise function.

$$11. f(x) = \begin{cases} -1 & x < 3 \\ 4 & x \geq 3 \end{cases}$$

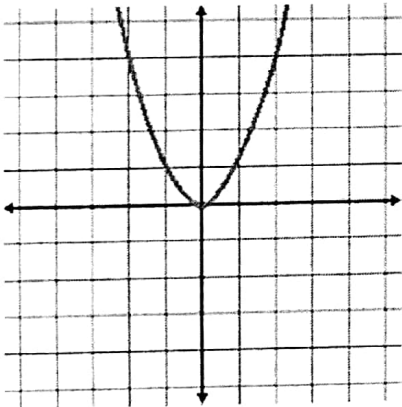


$$12. f(x) = \begin{cases} -x - 1 & x < -3 \\ -2 & -3 \leq x < 0 \\ -x^2 + 3 & x \geq 0 \end{cases}$$

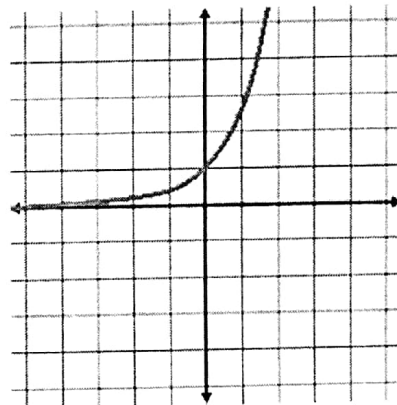


13. Compare the end behaviors of the given functions.

$$f(x) = x^2$$



$$g(x) = e^x$$



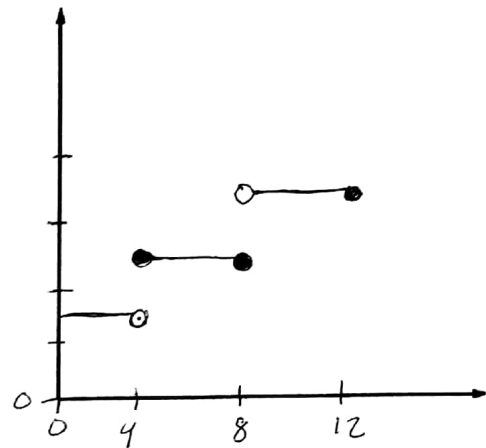
as  $x \rightarrow \infty$ ,  $f(x) \rightarrow \infty$  and  $g(x) \rightarrow \infty$

as  $x \rightarrow -\infty$ ,  $f(x) \rightarrow \infty$  and  $g(x) \rightarrow 0$

14. The post office offers flat-rate mailing of packages. Packages weighing less than 4 ounces are \$1.50, packages up to 8 ounces are \$2.50, and packages over 8 ounces are \$3.50. The post office will not ship a package for a flat rate that is over 12 ounces.

a. Write a piecewise function for the situation.

$$f(x) = \begin{cases} 1.50 & \text{if } x < 4 \\ 2.50 & 4 \leq x \leq 8 \\ 3.50 & 8 < x \leq 12 \end{cases}$$



b. How much will it cost to send 4 packages that weigh 2 ounces, 4 ounces, 6 ounces and 10 ounces?

$$f(2) = 1.50$$

$$f(6) = 2.50$$

$$1.50 + 2.50 + 2.50 + 3.50 = 10 \text{ \$}$$

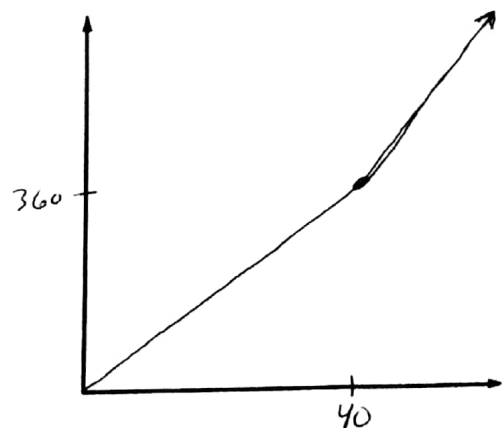
$$f(4) = 2.50$$

$$f(10) = 3.50$$

15. Ben gets paid \$9 an hour at his job. But, if he works over 40 hours during the week, he gets paid an overtime rate of \$13 an hour.

a. Write a piecewise function that calculates how much money Ben makes at his job and sketch a graph of the function.

$$f(x) = \begin{cases} 9x & \text{if } x \leq 40 \\ 360 + 13(x-40) & \text{if } x > 40 \end{cases}$$



b. Determine how much money Ben makes if he worked 30 hours one week and 48 hours the following week.

$$f(30) = 9(30) = 270$$

$$f(48) = 360 + 13(48 - 40) = 360 + 13(8) = 464 \text{ \$}$$