1. Explain what each section of the graph represents in the speed-time graph:

D-A ____________
A-B ____________
B-C ____________
C-D ____________
D-E ____________
E-F ____________

2. Explain what each section of the graph represents in the distance time graph:

A ____________
B ____________
C ____________
D ____________

3. Which of the following is not a function?

4. State the domain and range for graph A: ____________________________

5. State the domain and range for graph B: ____________________________

6. State the domain and range for graph C: ____________________________

7. State the domain and range for graph D: ____________________________
8. The Runner’s Club has its members document the miles they run each week. Which member increased his miles at a constant rate? Which runner decreased his miles at a constant rate? Who had no constant rate of increase or decrease?

<table>
<thead>
<tr>
<th></th>
<th>Week 1</th>
<th>Week 2</th>
<th>Week 3</th>
<th>Week 4</th>
<th>Week 5</th>
<th>Week 6</th>
<th>Week 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joe</td>
<td>3</td>
<td>6</td>
<td>10</td>
<td>15</td>
<td>21</td>
<td>28</td>
<td>36</td>
</tr>
<tr>
<td>Jan</td>
<td>2</td>
<td>5</td>
<td>8</td>
<td>11</td>
<td>14</td>
<td>17</td>
<td>20</td>
</tr>
<tr>
<td>Jill</td>
<td>5</td>
<td>7</td>
<td>9</td>
<td>12</td>
<td>16</td>
<td>18</td>
<td>21</td>
</tr>
<tr>
<td>Jack</td>
<td>12</td>
<td>11</td>
<td>10</td>
<td>9</td>
<td>8</td>
<td>7</td>
<td>6</td>
</tr>
</tbody>
</table>

9. You make $12 per hour babysitting. Write a function rule for this situation: \( f(h) = \) ________

Use your rule to calculate how much you would make working each of the following times.

Show your work.

3 hours ________________

3 hours 15 minutes ________________

3 hours 30 minutes ________________

3 hours 45 minutes ________________

Evaluate the functions, show ALL work

10. \( f(x) = -2x^2 \)  \( f(-4) = \) ________  \( f(-1) = \) ________  \( f(7) = \) ________

11. \( f(x) = -x^2 - 4 \)  \( f(-4) = \) ________  \( f(-1) = \) ________  \( f(7) = \) ________

12. \( f(x) = \frac{1}{x} \)  \( f(-4) = \) ________  \( f(-1) = \) ________  \( f(7) = \) ________ (no decimals!!)

13. You have $400 in your bank account. You have to start paying for your cell phone bill, so you give your parents $35 each month out of this account.

A. write a function rule ________________

B. when will you have $260 left in the account? ________________

C. When will you have $0 left in the account? ________________
Families of Functions Review

**Quadratic Functions:** $y = ax^2 + b$

Graph looks like this:  

How to tell if it opens up or down:

- $Y = 3x^2 - 5$ opens ____________  
  Because __________________________  
- $Y = -3x^2 + 5$ opens ____________  
  Because __________________________  

- Graph is called a __________________________

**Absolute Value functions:** $y = |x|$

Graph looks like this:  

How to tell if it opens up or down:

- $Y = |-3x| - 5$ opens ____________  
  Because __________________________  
- $Y = |−3x| - 5$ opens ____________  
  Because __________________________  

**Exponential Functions:** $y = a(b)^x$

Graph looks like:

**Square root functions:** $y = \sqrt{x}$  

Graph looks like:
**Rational functions:** \( y = \frac{a}{x} \)

Graph looks like:

**Linear functions:** \( y = ax + b \) (or \( y = mx + b \))

Graph looks like:

14. this graph is created from which rule?

A. \( y = |x + 2| \)

B. \( y = |x - 2| \)

C. \( y = |x| + 2 \)

D. \( y = -|x| + 2 \)

Examine each of the following tables. Name the family of functions to which each belong. If the function is quadratic or absolute value, also state whether the graph opens up or down.

Linear, Exponential, rational, quadratic (up), quadratic (down), absolute value (up), absolute value (down)

15.

<table>
<thead>
<tr>
<th>( x )</th>
<th>-2</th>
<th>-1</th>
<th>0</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>( y )</td>
<td>.25</td>
<td>.5</td>
<td>1</td>
<td>2</td>
<td>4</td>
</tr>
</tbody>
</table>
16. 

<table>
<thead>
<tr>
<th>x</th>
<th>-2</th>
<th>-1</th>
<th>0</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>y</td>
<td>16</td>
<td>4</td>
<td>0</td>
<td>4</td>
<td>16</td>
</tr>
</tbody>
</table>

17. 

<table>
<thead>
<tr>
<th>x</th>
<th>-2</th>
<th>-1</th>
<th>0</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>y</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

18. 

<table>
<thead>
<tr>
<th>x</th>
<th>-2</th>
<th>-1</th>
<th>0</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>y</td>
<td>6</td>
<td>2</td>
<td>-2</td>
<td>-6</td>
<td>-10</td>
</tr>
</tbody>
</table>

19. 

<table>
<thead>
<tr>
<th>x</th>
<th>-2</th>
<th>-1</th>
<th>0</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>y</td>
<td>-2.5</td>
<td>-5</td>
<td>Error</td>
<td>5</td>
<td>2.5</td>
</tr>
</tbody>
</table>

20. 

<table>
<thead>
<tr>
<th>x</th>
<th>-2</th>
<th>-1</th>
<th>0</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>y</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>
21.

<table>
<thead>
<tr>
<th>x</th>
<th>-2</th>
<th>-1</th>
<th>0</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>y</td>
<td>-12</td>
<td>-3</td>
<td>0</td>
<td>-3</td>
<td>-12</td>
</tr>
</tbody>
</table>

23.

Domain __________

Range __________

Function? __________

24.

Domain __________

Range __________

Function? __________

25. \((-4, 6), (-2, 10), (-4, 3), (0, 10), (2, -4)\)

Domain __________

Range __________

Function? __________

26. \((-4, 6), (-2, 6), (0, 3), (0, 10), (2, 6)\)

Domain __________

Range __________

Function? __________
27. Domain ________  
Range ________  
Function? ________  

28. Domain ________  
Range ________  
Function? ________  

29. Domain ________  
Range ________  
Function? ________  

Explain how you knew which mapping diagram was not a function.

Write a function rule for each table of values:

30. 
\[ x \quad | \quad f(x) \]
\[ \begin{array}{c|c}
-2 & 7 \\
-1 & 4 \\
0 & 1 \\
1 & -2 \\
\end{array} \]

31. 
\[ x \quad | \quad f(x) \]
\[ \begin{array}{c|c}
-4 & 8 \\
-2 & 4 \\
0 & 0 \\
2 & -4 \\
\end{array} \]

32. 
\[ x \quad | \quad f(x) \]
\[ \begin{array}{c|c}
-4 & -2 \\
-2 & 0 \\
0 & 2 \\
2 & 4 \\
\end{array} \]