1. Graphing Transformations

a) Given the function $f(x) = \sqrt{x}$ complete the following table. Must show all work for full credit.

<table>
<thead>
<tr>
<th>$x$</th>
<th>$f(x)$</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td></td>
</tr>
</tbody>
</table>

Show Work:

b) Using the table from part a, graph the function $f(x) = \sqrt{x}$. For a tutorial on creating graphs in Excel and inserting graphs of functions please see the Assignment List.

Answer:


c) Given the function $f(x) = \sqrt{x + 1}$ complete the following table. Must show all work for full credit.

<table>
<thead>
<tr>
<th>$x$</th>
<th>$f(x)$</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
</tr>
</tbody>
</table>

Show Work or Explain in Words:

d) Using the table from part c, graph the function $f(x) = \sqrt{x + 1}$. For a tutorial on creating graphs in Excel and inserting graphs of functions please see the Assignment List.
e) Given the graph of $y = f(x)$ describe in words the transformation of $y = f(x+1)$.

**Answer:**

2) Find the domain of the function and express the answer in interval notation. Explain in words or show the calculations for full credit.

a) $f(x) = 3x - 1$

**Answer:**

Show Work or Explain in Words:

b) $g(x) = \sqrt{x} + 5$

**Answer:**

Show Work or Explain in Words:

c) $f(x) = \frac{16x}{x^2 + 9}$

**Answer:**

Show Work or Explain in Words:

d) $g(x) = 13x^2 - 5x + 9$
e) \( f(x) = \frac{6}{x - 5} \)

Answer:
Show Work or Explain in Words:

3. Finding equations of asymptotes of rational functions. Recall that asymptotes are lines therefore the answer must be given as an equation of a line.

a) Find the equations of both the horizontal and vertical asymptotes of the rational function \( f(x) = \frac{5x - 1}{x^2 + 9} \)

Answer:
Horizontal:
Vertical:

Show Work or Explain in Words:

b) Find the equations of both the horizontal and vertical asymptotes of the rational function \( f(x) = \frac{2x^2 + 8}{x - 1} \)

Answer:
Horizontal:
Vertical:

Show Work or Explain in Words:
c) Given the graph of a rational function find the equations of both the vertical and horizontal asymptotes.

\[ \frac{1}{x-2} \]

Answer:
Horizontal:
Vertical:

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d) In words explain what an asymptote is.

Answer: