Unit 04-02 Quiz

Multiple Choice
Identify the choice that best completes the statement or answers the question.

1. Given $t(x)$ is a transformation of the graph $f(x) = 2^x$, determine which of the below correctly describe $t(x)$?

   a. $t(x) = 2^{(x-1)} - 3$
   b. $t(x) = 2^{(x+1)} - 3$
   c. $t(x) = 2^{(x-1)} + 3$
   d. $t(x) = 2^{(x+1)} + 3$

2. Given $g(x)$ is a transformation of the graph $f(x)$, determine which of the below correctly describe $g(x)$?

   a. $g(x) = f(x) - 4$
   b. $g(x) = f(x - 4)$
   c. $g(x) = f(x) + 4$
   d. $g(x) = f(x + 4)$
3. Consider the parent function $f(x) = 4^x$. How would the original graph be transformed if it were to be changed to $f(x) = 4^{(x+1)} - 2$?

   a. The graph would be translated **right 1** and **down 2**.
   b. The graph would be translated **left 1** and **down 2**.
   c. The graph would be translated **right 2** and **down 1**.
   d. The graph would be translated **left 2** and **down 1**.

4. Consider a partial set of ordered values of the function $f(x) = 3^x$.

<table>
<thead>
<tr>
<th>$x$</th>
<th>$f(x)$</th>
</tr>
</thead>
<tbody>
<tr>
<td>−1</td>
<td>½</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>3</td>
<td>27</td>
</tr>
</tbody>
</table>

Given $g(x)$ is a transformation of the graph $f(x)$ and the following set shows a partial set of ordered values of $g(x)$.

<table>
<thead>
<tr>
<th>$x$</th>
<th>$g(x)$</th>
</tr>
</thead>
<tbody>
<tr>
<td>−1</td>
<td>$\frac{1}{3}$</td>
</tr>
<tr>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>28</td>
</tr>
</tbody>
</table>

Describe how $f(x)$ is transformed to describe $g(x)$.

   a. The function $f(x)$ would be translated **left 1**.
   b. The function $f(x)$ would be translated **right 1**.
   c. The function $f(x)$ would be translated **down 1**.
   d. The function $f(x)$ would be translated **up 1**.

5. Given $g(x)$ is a transformation of the graph $f(x)$, determine which of the below correctly describe $g(x)$?

![Graph transformation diagram]

   a. $g(x) = f(−x)$
   b. $g(x) = −f(x)$
   c. $g(x) = f(x) + a$
   d. $g(x) = f(x) + b$
6. Consider the parent function \( f(x) = \left( \frac{1}{3} \right)^x \). How would the original graph be transformed if it were to be changed to \( f(x) = \left( \frac{1}{3} \right)^{-x} \)?

   a. The graph would be reflected over the y-axis.
   b. The graph would be reflected over the x-axis.
   c. The graph would be reflected over the line \( y = x \).
   d. The graph would be reflected over the line \( y = -x \).