Function Notation Practice

1) Given the function $f(x) = 12x + 1$.
   a) Find $f(4)$.
   b) Find $f(-3)$.

2) Evaluate the function $f(x) = x^2 - 3$ when $x = -2, 0, $ and $2$.

3) Complete the function table for $f(x) = 10 - 2x$.

<table>
<thead>
<tr>
<th>$x$</th>
<th>Rule $f(x) = 10 - 2x$</th>
<th>$f(x)$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$-1$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$0$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$2$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4) Describe and correct the following error for evaluating the function $g(x) = -5x + 3$ when $x = -3$.

   \[ g(-3) = (-5)(-3) + 3 \]

   \[ -3g = 18 \]

   \[ g = -6 \]

5) For the function $f(x) = 6x + 9$, find the value of $x$ so that $f(x) = 3$.

Find the zero of the following functions.

8) $f(x) = -12x - 36$

9) $g(x) = -x + 5$
State the domain and range for each graph in set builder notation. Then tell if the graph is a function (write yes or no). If the graph is a function, state whether it is discrete or continuous.

10) Domain___________  Range___________  Function?:__________

11) Domain___________  Range___________  Function?:__________

12) Domain___________  Range___________  Function?:__________

13) Use the graph of the function $g(x)$ to answer the following:

A) Find $x$ if $g(x) = 1$

B) Find $x$ if $g(x) = -2$

C) $g(0) =$

D) $g(3) =$

Is each relation a function or not? Explain why or why not.

14) $\{(4, -5), (0, -9), (1, 0), (7, 0)\}$

15) $\{(-2, -5), (4, 9), (1, 10), (-2, 4)\}$

16) For the relation $\{(3, 12), (5, 34), (12, 54), (X, 22)\}$ to be a function, $X$ cannot be which of the following values? (Circle all that apply.)

3  5  12  22  34  54
17) Find the range for the function \( f(x) = 3x - 2 \) with domain values of -2, -1, 0, 1.

18) Find the intercepts for the following graph:

![Graph with x-intercepts and y-intercepts](image)

19) Find the zero(s) of the following functions.
   a) ![Graph with zero at -6](image)
   b) ![Graph with zero at 3](image)

20) Which of the following functions has a zero at -9?
   a) \( f(x) = -12x - 36 \)
   b) \( y = 4x + 36 \)
   c) \( y = 2x - 36 \)
   d) \( g(x) = -x + 5 \)
21) The number of students trying to join the science club is 4 more than 5 times the number of students trying to join math club. Write the expression that represents the number of students trying to join the science club.

22) The number of points two football teams scored is summarized in these box-and-whisker plots.

![Box-and-Whisker Plot](image)

Team A scores a different number of points in each of the team’s 15 games.
Team B scored a different number of points in each of the team’s 16 games.

**What is the total number of games in which Team A and Team B scored 55 or more points?**

23) Write the property that justifies each step of the solution.

<table>
<thead>
<tr>
<th>Equation</th>
<th>Reason/Property</th>
</tr>
</thead>
<tbody>
<tr>
<td>2(3x - 5) = 14</td>
<td></td>
</tr>
<tr>
<td>6x - 10 = 14</td>
<td></td>
</tr>
<tr>
<td>6x - 10 + 10 = 14 + 10</td>
<td></td>
</tr>
<tr>
<td>6x + 0 = 14 + 10</td>
<td></td>
</tr>
<tr>
<td>6x + 0 = 24</td>
<td></td>
</tr>
<tr>
<td>6x = 24</td>
<td></td>
</tr>
<tr>
<td>6x = 24</td>
<td></td>
</tr>
<tr>
<td>6x/6 = 24</td>
<td></td>
</tr>
<tr>
<td>1x = 4</td>
<td></td>
</tr>
<tr>
<td>x = 4</td>
<td></td>
</tr>
</tbody>
</table>

Evaluate the following expressions using the given values for the variables:

24) \( m(p + q)^3 \) when \( m = 2, p = -4, \) and \( q = -4 \)

25) \( (5)[(n + m^2) ÷ 4] \) when \( m = -6, \) and \( n = 4 \)