Unit04-05-Sample Quiz

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

____ 1. The function, \( f(x) = ax + c \), is graphed at the right.

What is the range of the function \( f(x) \) shown?

a. Range: \( f(x) > c \)  
b. Range: \( f(x) > a \)  
c. Range: \( f(x) < b \)  
d. Range: \( \{ \text{ALL REALS (\( \mathbb{R} \))} \} \)

____ 2. Consider the function, \( f(x) = 2^x + 2 \), which is the only number below that is not part of the range of the function \( f(x) \)?

a. \(-2\)  
b. \(3\)  
c. \(4\)  
d. \(6\)
3. The function, \( f(x) = ax + c \), is graphed at the right.

What is the complete set of interval(s) of increase for the function \( f(x) \)?

- a. \((c, \infty)\)
- b. \((b, \infty)\)
- c. \((\infty, \infty)\)
- d. \(\emptyset\); Empty Set

4. The function, \( f(x) = x^3 + 6x^2 + 9x + 3 \), is graphed at the right.

What is the complete set of interval(s) of decrease for the function \( f(x) \)?

- a. \((-\infty, -3) \cup (1, \infty)\)
- b. \((-3, -1)\)
- c. \((-1, 3)\)
- d. \((-\infty, \infty)\)
5. The function, \( h(x) = (\frac{1}{2})^x - 4 \), is graphed at the right.

As \( x \to \infty \), determine \( h(x) \to _____ \)

(i.e. As \( x \) approaches infinity what does \( h(x) \) approach?)

\[ \begin{align*}
\text{a. } h(x) &\to -\infty \\
\text{b. } h(x) &\to \infty \\
\text{c. } h(x) &\to \frac{1}{2} \\
\text{d. } h(x) &\to -4
\end{align*} \]

6. Which is the only function that has the property as \( x \to -\infty \), \( f(x) \to 0 \)?

\[ \begin{align*}
\text{a. } & \\
\text{b. } & \\
\text{c. } & \\
\text{d. } &
\end{align*} \]

7. Consider the function, \( m(x) = 2^x - 4 \). Determine the \textbf{y-intercept} for the function \( m(x) \).

\[ \begin{align*}
\text{a. } & (0, -4) \\
\text{b. } & (2, 0) \\
\text{c. } & (-3, 0) \\
\text{d. } & (0, -3)
\end{align*} \]
8. Which is the only function that has a different x-intercept than the rest?

   a. \( a(x) = 2^x - 4 \)
   b. \( b(x) = 3^x - 6 \)
   c. \( c(x) = 3^x - 9 \)
   d. \( d(x) = -2^x + 4 \)

9. Which function below has an asymptote at \( y = b \)?

   a. \( f(x) = a \cdot b^x + c \)
   b. \( g(x) = c \cdot b^x + a \)
   c. \( h(x) = b \cdot a^x + c \)
   d. \( k(x) = a \cdot c^x + b \)

10. Which function below has the greatest average rate of change from \( x = 0 \) to \( x = 1 \)?

    a. \( a(x) = 2^x \)
    b. \( b(x) = 2^x + 3 \)
    c. \( c(x) = -3^x + 2 \)
    d. \( d(x) = 3^x - 2 \)