These released questions represent selected TEKS student expectations for each reporting category. These questions are samples only and do not represent all the student expectations eligible for assessment.
The graph of the function \( g \) was obtained from the graph of the function \( f \) using a transformation as shown above. Based on the graph, which equation can be used to describe \( g(x) \) in terms of \( f(x) \)?

A \( g(x) = f(x) + 6 \)  
B \( g(x) = f(x + 6) \)  
C \( g(x) = f(x) - 6 \)  
D \( g(x) = f(x - 6) \)
The graph of the function $f$ is shown below.

Which grid shows the graph of $f^{-1}$?
3  Given the equation $\sqrt{\frac{x}{y}} = 4$, which of the following represents $y$ in terms of $x$?

A  $y = \frac{x}{2}$

B  $y = \frac{2}{x}$

C  $y = \frac{x}{16}$

D  $y = \frac{16}{x}$

4  What is the $y$-value of the solution to the matrix equation below?

$$\begin{bmatrix} 3 & 2 \\ 2 & 1 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 3 \\ 4 \end{bmatrix}$$

A  $-6$

B  $14$

C  $-5$

D  $12$
5 Which of the following quadratic functions does not have zeros of \(-15\) and \(6\)?

\[ A \quad f(x) = \frac{1}{3}x^2 + 3x - 30 \]

\[ B \quad f(x) = -x^2 - 9x + 90 \]

\[ C \quad f(x) = -\frac{2}{3}x^2 - 6x + 60 \]

\[ D \quad f(x) = -x^2 - 9x - 90 \]

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6 The base of a triangle is 3 inches less than twice its height. If the area of the triangle is 126 square inches, which of the following equations can be used to find \(h\), the height of the triangle in inches?

\[ A \quad 2h^2 - 3h + 63 = 0 \]

\[ B \quad 2h^2 - 3h - 63 = 0 \]

\[ C \quad 2h^2 - 3h + 252 = 0 \]

\[ D \quad 2h^2 - 3h - 252 = 0 \]
7 The table below shows ordered pairs that satisfy the quadratic function $f$.

<table>
<thead>
<tr>
<th>$x$</th>
<th>$f(x)$</th>
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<tr>
<td>−2</td>
<td>31</td>
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<tr>
<td>−1</td>
<td>20</td>
</tr>
<tr>
<td>0</td>
<td>11</td>
</tr>
<tr>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>−1</td>
</tr>
<tr>
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<td>−5</td>
</tr>
<tr>
<td>5</td>
<td>−4</td>
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</table>

Based on the table, a solution to the equation $f(x) = 0$ is found in which interval?

A $−2 < x < −1$
B $−1 < x < 1$
C $1 < x < 2$
D $3 < x < 5$

8 Which figure best describes the graph of $2x^2 + 5y^2 − 2x − 10y − 15 = 0$?

A Circle
B Ellipse
C Parabola
D Hyperbola
9  The graph of the quadratic function \( f \) is shown on the grid below.

If the graph of \( f \) is translated 5 units to the right and 4 units down to create a new graph, which function best represents this new graph?

A  \( g(x) = -(x + 3)^2 - 1 \)

B  \( g(x) = -(x - 3)^2 - 1 \)

C  \( g(x) = (3 - x)^2 + 1 \)

D  \( g(x) = (3 - x)^2 - 1 \)

10  What value of \( p \) is a solution to the equation below?

\[ 8\sqrt{p} - 1 = 3 \]

Record your answer and fill in the bubbles on your answer document.
11 The formula \[ P = 2\pi \left( \frac{L}{\sqrt{32}} \right) \] can be used to approximate the period of a pendulum, where \( L \) is the pendulum’s length in feet and \( P \) is the pendulum’s period in seconds. If a pendulum’s period is 1.6 seconds, which of the following is closest to the length of the pendulum?

A 1.4 ft  
B 4.2 ft  
C 2.1 ft  
D 3.2 ft

12 A chemical compound’s concentration in milligrams per liter during a reaction can be modeled by the function below, where \( t \) represents the number of seconds that have elapsed during the reaction.

\[ f(t) = \frac{100}{t^2 + 1} \]

In this situation, what are the domain and range for this function?

A Domain: \( t \geq 0 \); range: \( 0 < f(t) \leq 100 \)  
B Domain: \( t \geq 0 \); range: \( f(t) \geq 100 \)  
C Domain: \( t \leq 0 \); range: \( 0 < f(t) \leq 100 \)  
D Domain: \( t \leq 0 \); range: \( f(t) \geq 100 \)
13 A monthly cell phone plan charges $5.00 for the first 300 text messages used and $0.15 for each additional message. On this plan, what is the number of text messages that must be used in a month in order to make the average cost per message $0.05?

A 400
B 350
C 900
D 500

14 Which function is the inverse of \( f(x) = 2^x + 1 \)?

A \( g(x) = \log_2(x - 1) \)
B \( g(x) = \log_2(x) - 1 \)
C \( g(x) = \log_2(x + 1) \)
D \( g(x) = \log_2(x) + 1 \)

15 A family spent a total of $1946 on fast food this year. If this family decreases the amount it spends on fast food by 3% every year, which of the following is closest to the annual amount the family will spend on fast food after 5 years?

A $1888
B $1671
C $1931
D $1654
<table>
<thead>
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<th>Item Number</th>
<th>Reporting Category</th>
<th>Readiness or Supporting</th>
<th>Content Student Expectation</th>
<th>Correct Answer</th>
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