Name: _____ Block: _____

Review #1   Pre-Calculus 12   Chapters 1 - 3

Completion
Complete each statement.

1. The variable k in the function $f(x) = a\sqrt{b(x-h)} + k$ represents a __vert. translation.__

2. The graph of $g(x) = \sqrt{f(x+8)}$ is the graph of $f(x)$ moved 8 units to the __left__.

3. When solving the equation $0 = -10 + \sqrt{-3x+6} - 6$ algebraically, the restriction on the variable is __$x \le 2$__.

   $-3x + 6 \ge 0 \qquad -3x \ge -6 \qquad x \le 2$

4. The solution to the equation $0 = -4 + 2\sqrt{x+19}$ is __$x = -15$__.

   $(2)^2 (\sqrt{x+19})^2$
   $4 = x + 19$
   $x = -15$

5. The function $f(x) = x^3 - x^2 - 4x + 4$ is positive over the interval(s) __$-2 < x < 1$, $x > 2$__

6. The zeros of the function $f(x) = 2x^3 - 5x^2 - 4x + 3$ are __$x = -1, 3, \frac{1}{2}$__.

7. If $P(-5) = 0$ for a polynomial $P(x)$, then __$x + 5$__ is a factor of $P(x)$.

8. If $P(x) = -9x^3 - 3x^2 - 6x - 9$ is divided by $x - 4$, the remainder is __-657__.

   $P(4) = -9(4)^3 - 3(4)^2 - 6(4)$
   $ -9$
   $= -576 - 48 - 24 - 9$
   $= -657$

9. __Stretches__ are transformations that cause the graph of a function to change shape without changing the orientation of the graph.

10. The graph of $g(x) = f(x-2)$ is the graph of $f(x)$ translated 2 units __to the right__.

11. The __y-intercept__ is (are) invariant on a function after a reflection in the y-axis.

12. The graph of $f(x)$ is reflected in the y-axis, translated 8 units to the left, and translated 7 units down. The equation of the transformed function is $g(x) = $ __$f(-(x+8)) - 7$__.

13. The inverse of the function $f(x) = \frac{5}{4}x - 5$ is __$y = \frac{4}{5}(x+5)$__ $= \frac{4}{5}x + 4$

    $x = \frac{5}{4}y - 5$

    $4(x+5) = 5y$

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Matching

Match each definition or explanation given below to its corresponding term.

A   transformation   D   image point
B   mapping   E   reflection
C   inverse of a relation   F   invariant point

_D_   **1.**   the point that is the result of a transformation of the original point on the graph

_F_   **2.**   a point that is mapped to itself by the function

_B_   **3.**   a rule of correspondence established between sets that associates each element of a set with an element in the same or another set

_C_   **4.**   a relation that undoes another relation

_A_   **5.**   a change made to a figure or graph of a relation that results in a shift or change in shape of the figure or graph

Match the correct term with the correct part of the statement.

$$\frac{x^4 - 16x^3 + 99x^2 - 234x + 216}{x+8} = x^3 - 24x^2 + 291x - 2562 + \frac{20\,712}{x+8}$$

A   quotient   C   divisor
B   remainder   D   dividend

_D_   **6.** $x^4 - 16x^3 + 99x^2 - 234x + 216$

_C_   **7.** $x + 8$

_A_   **8.** $x^3 - 24x^2 + 291x - 2562$

_B_   **9.**   20 712