



MATH 150 - WEEK-IN-REVIEW 3

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PROBLEM STATEMENTS

1. Determine whether each equation represents y as a function of x .

(a) $4x = |y + 12|$

(b) $6x - y^6 = 8$

(c) $y + 11 = 3x$

(d) $6 = y^5 - 4x$

2. Consider the function

$$h(x) = \begin{cases} 5x - 1 & , \text{ if } x \leq -2 \\ (x + 3)^2 & , \text{ if } x > -2. \end{cases}$$

Find $h(-5)$, $h(-2)$, and $h(2)$.

3. Find the domain of the following functions.

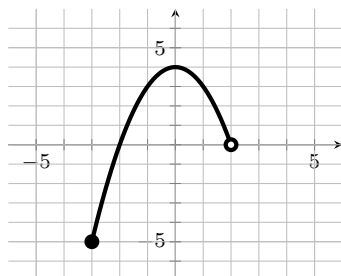
(a) $f(x) = -3x^2 + 5$

(b) $g(x) = \sqrt{2x - 5}$

(c) $p(x) = \frac{x + 4}{\sqrt{x - 1}}$

(d) $q(x) = \sqrt[7]{2x - 5}$

4. Use the graph of the function f below to find its domain and range, then find the function values $f(-1)$, $f(2)$, and $f(4)$.



5. Determine whether the function is even, odd, or neither. Then describe the symmetry.

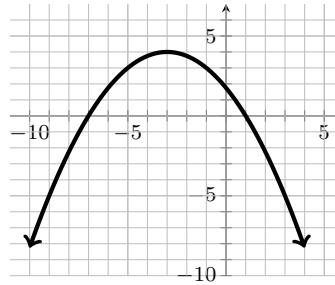
(a) $f(x) = x\sqrt[3]{x^4 + 1}$

(b) $g(x) = \frac{x^4 - 9}{x^2 + 9}$

(c) $h(x) = x^3 - 3x^2$



6. The graph of a function g is given below.



- Identify the parent function f .
- Describe the sequence of transformations from f to g .
- Find the function g .
- Use function notation to write g in terms of f .

7. Consider the function $g(x) = 2\sqrt{-x + 3} - 4$.

- Identify the parent function f .
- Describe the sequence of transformations from f to g .
- Use function notation to write g in terms of f .
- Sketch the graph of g .

**Exam 1 Review**

1. Let L_1 be the line passing through the points $(2, -1)$ and $(1, 5)$, and L_2 be the line passing through the points $(1, 4)$ and $(9, 8)$. Determine whether the lines are parallel, perpendicular, or neither.

2. Solve the inequality $|9 - 2x| - 2 < -1$.

3. Write the following expression in reduced form, find where the expression = 0, and include the restrictions of the function.

$$\frac{x^4 + 2x}{5x^2 + x}$$

4. Rationalize the denominator of the expression $\frac{2}{\sqrt{10} - 2}$ and simplify your answer.



5. Simplify each expression.

a) $243^{-4/5}$

b) $(2x + 3)^{-7/2}(2x + 3)^{2/3}$

c) $(x^4y^2)^{1/3}(xy)^{-1/3}$

d) $\frac{(7x^5)^{6/5}}{7^{1/5}x^7}$



e) $\sqrt{12x^2y^{-4}}$

f) $5\sqrt{50x^2} + 2\sqrt{8x^2}$

6. Solve the quadratic equation $12x^2 + 12x = 3$ by completing the square.

7. Solve the equation $3x + 9 = 2x^2 - 2$.



8. Solve the equation. Check for extraneous solutions.

$$\frac{12}{x^2 + 2x - 3} = \frac{3}{x - 1} + \frac{7}{x + 3}$$

9. For $z_1 = 2 + 3i$ and $z_2 = 4 - i$, find $z_1 + z_2$, $z_1 - z_2$, $z_1 \cdot z_2$, and $\frac{z_1}{z_2}$.