

Determine algebraically whether the function is even, odd, or neither.

1)  $f(x) = -4x^4 - x^2$

Solve the problem.

2) Find the length of each side of the triangle determined by the three points  $P_1$ ,  $P_2$ , and  $P_3$ . State whether the triangle is an isosceles triangle, a right triangle, neither of these, or both.

$P_1 = (-5, -4)$ ,  $P_2 = (-3, 4)$ ,  $P_3 = (0, -1)$

3) Super Sally, a truly amazing individual, picks up a rock and throws it as hard as she can. The table below displays the relationship between the rock's horizontal distance,  $d$  (in feet) from Sally and the initial speed with which she throws.

|  |     |      |      |      |      |
|--|-----|------|------|------|------|
| Initial speed (in ft/sec), $v$                 | 10  | 15   | 20   | 25   | 30   |
| Horizontal distance of the rock (in feet), $d$ | 9.9 | 14.8 | 19.1 | 24.5 | 28.2 |

Assume that the horizontal distance travelled varies linearly with the speed with which the rock is thrown. Using a graphing utility, find the line of best fit, and estimate, rounded to two decimal places, the horizontal distance of the rock if the initial speed is 33 ft/sec.

4) A wire of length  $7x$  is bent into the shape of a square. Express the area  $A$  of the square as a function of  $x$ .

For the given functions  $f$  and  $g$ , find the requested function and state its domain.

5)  $f(x) = 3x^3 + 2$ ;  $g(x) = 4x^2 - 1$

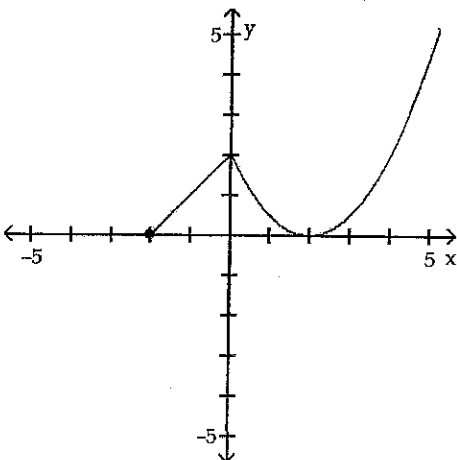
Find  $f \cdot g$ .

Find an equation for the line with the given properties. Express the answer using the general form of the equation of a line.

6) Perpendicular to the line  $9x - 2y = -25$ ; containing the point  $(-1, 16)$

Determine whether the graph is that of a function. If it is, use the graph to find its domain and range, the intercepts, if any, and any symmetry with respect to the  $x$ -axis, the  $y$ -axis, or the origin.

7)



Find the function that is finally graphed after the following transformations are applied to the graph of  $y = \sqrt{x}$ .

- 8) i) Shift down 9 units
- ii) Reflect about the y-axis
- iii) Shift right 8 units

Use a graphing utility to approximate the real solutions, if any, of the equation rounded to two decimal places.

9)  $x^4 - 5x^3 + 6x - 2 = 0$

List the intercepts for the graph of the equation.

10)  $4x^2 + 16y^2 = 64$

Find the value for the function.

11) Find  $f(x + h)$  when  $f(x) = \frac{3x + 7}{5x - 8}$ .

Solve the equation algebraically. Verify the solution using a graphing utility.

12)  $x^3 + 6x^2 + 16x + 96 = 0$

Use a graphing utility to graph the function over the indicated interval and approximate any local maxima and local minima. Determine where the function is increasing and where it is decreasing. If necessary, round answers to two decimal places.

13)  $f(x) = x^3 - 4x^2 + 6$ ;  $(-1, 4)$

Find the average rate of change for the function between the given values.

14)  $f(x) = \sqrt{2x}$ ; from 2 to 8

Find the center  $(h, k)$  and radius  $r$  of the circle.

15)  $x^2 + y^2 - 2x - 10y + 22 = 0$

NAME \_\_\_\_\_  
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\_\_\_\_\_  
\_\_\_\_\_

You will receive a cumulative review at the end of certain chapters to be handed in one week later. This will be graded but you may work in study groups if you wish. All work for each problem must be completed in the provided boxes for credit.

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5.  $f \circ g =$  \_\_\_\_\_ D: \_\_\_\_\_

6. \_\_\_\_\_

7. \_\_\_\_\_ D: \_\_\_\_\_ R: \_\_\_\_\_ Int: \_\_\_\_\_ Sym: \_\_\_\_\_

8. \_\_\_\_\_

9. \_\_\_\_\_

10. x: \_\_\_\_\_ y: \_\_\_\_\_

11.  $f(x + h) =$  \_\_\_\_\_

12. \_\_\_\_\_

13. Max: \_\_\_\_\_ Min: \_\_\_\_\_ Inc: \_\_\_\_\_ Dec: \_\_\_\_\_

14. \_\_\_\_\_

15. C: \_\_\_\_\_ r = \_\_\_\_\_

|    |    |    |
|----|----|----|
| 1  | 2  | 3  |
| 4  | 5  | 6  |
| 7  | 8  | 9  |
| 10 | 11 | 12 |
| 13 | 14 | 15 |