Functions Worksheet 6

Graph 1

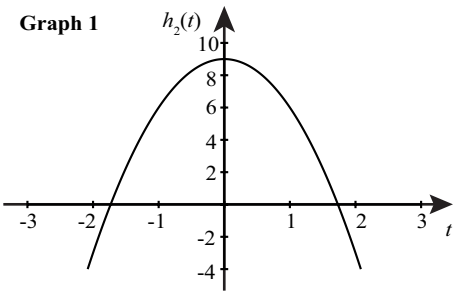

Table 1

v	KE_2
-3	4.5
0	0
1	0.5
3	4.5
5	12.5
7	24.5

1. If the height of object 1 is given by $h_1(t) = -3t^2 + 12$ and object 2 travels along the path indicated in **Graph1**. If launched at the same time, which object will reach a maximum height first?

2. The kinetic energy of ball 1 is given by $KE_1 = \frac{1}{2}mv^2 + 5mv + 12$ and the kinetic energy of ball 2 is given by the **Table 1**. Which ball has a higher kinetic energy at $v = 2$ if we assume $m = 1$?

3. You and your friend start driving at the same time in different cars. For every hour t, you will travel $y = 53t$ miles, while your friend traveled a total of 102 miles after the first 2 hours and 153 miles after another hour. What will be the distance between you and your friend when $t = 10$?

4. Parabola 1 has x-intercepts at -1 and 3 and a y-intercept of -3. Parabola 2 has the equation $f_2(x) = x^2 - 5x + 6$. Which parabola has a higher minimum?

5. If it rains 2 inches on Monday and it increases to 4 inches by Friday, what is the rate of increase in many inches per day?

6. Line a is given by the equation $y = 3x - 7$ and line b contains points (0, 5) and (2, 9). Which of the two lines has a greater slope?

7. Compare the equations of the following functions: $f_1(x) = x^3 + 3x^2 - x - 3$ and $f_2(x) = \frac{1}{3}(x-2)(x+2)(x-1)(x+1)(x+3)$. Which function has more zeros?

8. Two rational functions, $r(x) = \frac{8x^2+2}{x^2-1}$ and $t(x) = \frac{2x+7}{x+1}$, are given. What are the equations of all the asymptotes of both functions?

9. If $f(x)$ is a polynomial function with an order of 7 and $g(x)$ is a linear function

with a slope of 2. Which function will cross the y-axis more?

10. Which of the functions $u(x) = 3x^2 - 3$ and $w(x) = 2^x - 3$ has the smallest possible y value?

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