Functions Worksheet 6 - Answers
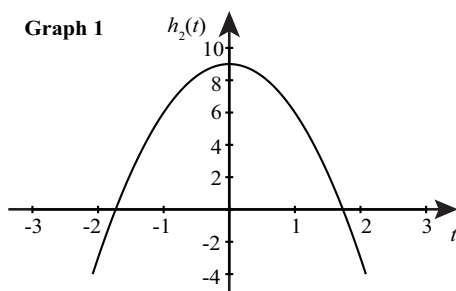
Graph 1

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? Object 1 reaches its maximum height first (at $t = 0$).

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 $m = 1$? Ball 1 will have a higher kinetic energy than ball 2.

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 $t = 10$? You will be 20 miles ahead of your friend by $t = 10$.

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? The tangent to $d(t)$ at $t = 4$ hr.

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? Parabola 2 has a higher minimum.

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? Line a 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? $\frac{\Delta g(x)}{\Delta x} = -\frac{1}{30}$.

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? The equations of all our asymptotes are: $x = -1$ (twice), $x = 1$, $y = 2$, and $y = 8$.

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? They will both cross the y-axis once, no more, no less.

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

The function $u(x)$ has the smallest possible y value because it reaches $y = -3$ while $w(x)$ only approaches it.