**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Unit 8- Quadratic Functions Review Alg 1**

1. On the set of axes below, draw the graph of$\left(x\right)=-x^{2}+5x+1$ .



Is the vertex a maximum or a minimum?

State the vertex of the equation.

1. The graph below shows the function $f(x)$.



 On the same grid, **graph** the following, then state the **vertex** for each:

1. $g\left(x\right)=f(x-2)$
2. $h\left(x\right)=f\left(x\right)+2$
3. $j\left(x\right)=f\left(x+4\right)-5$
4. A football player attempts to kick a football over a goal post. The path of the football can be modeled by the function $h\left(t\right)=-\frac{1}{225}x^{2}+\frac{2}{3}x$, where *x* is the horizontal distance from the kick, and $h(x)$ is the height of the football above the ground, when both are measured in feet. On the set of axes below, graph the function $y=h(x)$ over the interval $0\leq x\leq 150$.



Determine the vertex of $y=h(x)$.

Interpret the meaning of this vertex in the context of the problem.

1. The graph of the function $f(x)$ is shown below.



Describe what happens to the graph with each of the transformations:

1. The leading coefficient is multiplied by $-\frac{1}{2}$
2. The leading coefficient is multiplied by $-4$
3. Let $f$ be the function represented by the graph below.



Let $g$ be a function such that $g(x)$=$-\frac{1}{3}x^{2}+6x+4$.

State the maximum value for each and explain how your arrived at your answer.

Determine which function has the larger maximum value.

1. At an office supply store, if a customer purchases fewer than 10 pencils, the cost of each pencil is $1.75. If a customer purchases 10 or more pencils, the cost of each pencil is $1.25. Let *c* be a function for which$c\left(x\right)$is the cost of purchasing *x* pencils, where *x* is a whole number.



Determine the difference in costs, *in dollars*, 8 pencils versus 15 pencils.

Determine the number of pencils that must be ordered for the cost to be $16.25. Explain how you arrived at this answer.

1. If $f\left(x\right)=\frac{x}{x²-16}$, what is the value of $f(-10)$?

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1) |  | 2) |  | 3) |  | 4) |  |
|  |  |  |  |  |  |  |  |

1. A toy rocket is launched from the ground straight upward. The height of the rocket above the ground, in feet, is given by the equation $h\left(t\right)=-16t^{2}+64t$, where *t* is the time in seconds. Determine the average speed of the rocket between 0 and 2 seconds after it was launched.
2. Determine whether each scenario is linear, quadratic, or exponential.
	1. Two friends are having a catch. The ball is thrown 20 feet between the two friends and reaches a maximum height of 18 feet halfway between the two friends.
	2. Money is invested in a bank account and earns interest at a rate of 0.03% compounded monthly.
	3. Navaeh is a baby sitter and makes $10 per hour.
3. The relationship of a woman’s shoe size and length of a woman’s foot, in inches, is given in the accompanying table.



1. The linear correlation coefficient for this relationship is

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1) | 1 | 2) |  | 3) | 0.5 | 4) | 0 |

1. Write the equation of the linear function.