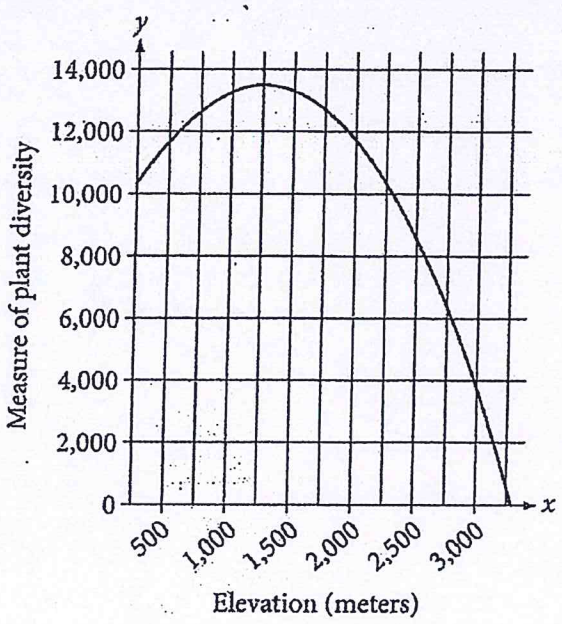
Bellwork Alg 2 Tuesday, October 31, 2018

NO calculator can be used on these problems.

1. The quadratic graphed below models a particular measure of plant diversity as a function of the elevation in a region of Switzerland. According to the model, which of the following is closest to the elevation, in meters, at which plant diversity is greatest?



A) 13,500 B) 3,000 C) 1,250 D) 250

2. The function f defined by $f(x) = x^2$ is graphed in the xy-plane. The graph of the function g in the xy-plane is the graph of f shifted 4 units upward. Which of the following defines $g(x)$?

A) $g(x) = f(x+4)$ B) $g(x) = f(x-4)$ C) $g(x) = f(x)+4$ D) $g(x) = f(x)-4$

3. According to a model, the head width, in millimeters, of a worker bumblebee can be estimated by adding 0.6 to four times the body weight of the bee, in grams. According to the model, what would be the head width, in millimeters, of a worker bumblebee that has a body weight of 0.5 grams?

4. $(ax+by)(cx-dy)$

In the expression above a, b, c and d are non-zero constants and $ad = bc$. If $ac = 18$ and $bd = 50$, what is the value of the coefficient of the xy terms when the expression is multiplied out and the like terms are collected?

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ANSWERS

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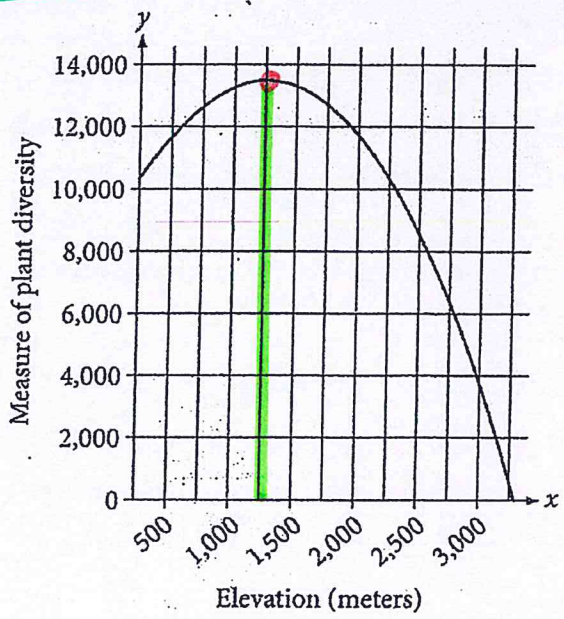
VERTEX



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2. The function f defined by $f(x) = x^2$ is graphed in the xy-plane. The graph of the function g in the xy-plane is the graph of f shifted 4 units upward. Which of the following defines $g(x)$?

A) $g(x) = f(x+4)$ B) $g(x) = f(x-4)$ C) $g(x) = f(x)+4$ D) $g(x) = f(x)-4$

↑ this moves $f(x)$ 4 units up

3. According to a model, the head width, in millimeters, of a worker bumblebee can be estimated by adding 0.6 to four times the body weight of the bee, in grams. According to the model, what would be the head width, in millimeters, of a worker bumblebee that has a body weight of 0.5 grams?

H W

$H = 4W + 0.6$

$H = 4(.5) + 0.6$

$H = 2 + 0.6 = 2.6$ mm

4. $(ax+by)(cx-dy)$

In the expression above a, b, c and d are non-zero constants and $ad = bc$. If $ac = 18$ and $bd = 50$, what is the value of the coefficient of the xy terms when the expression is multiplied out and the like terms are collected?

	ax	$+by$
cx	acx^2	$+bcxy$
$-dy$	$-adxy$	$-bdy^2$

$= acx^2 + bcxy - adxy - bdy^2$

since $ad = bc$ these terms cancel

$18x^2 + 0xy - 50y^2$

0