



# Smarter Balanced Assessment Consortium: Practice Test Scoring Guide Grade 11

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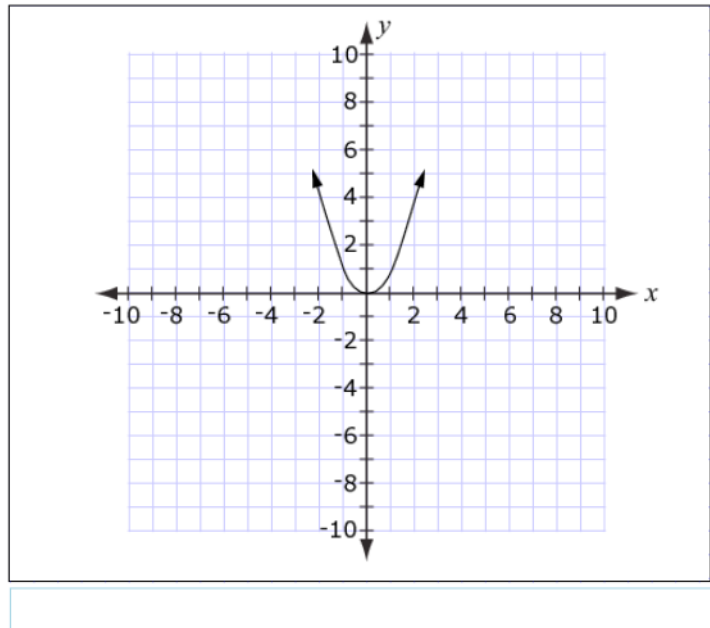


662



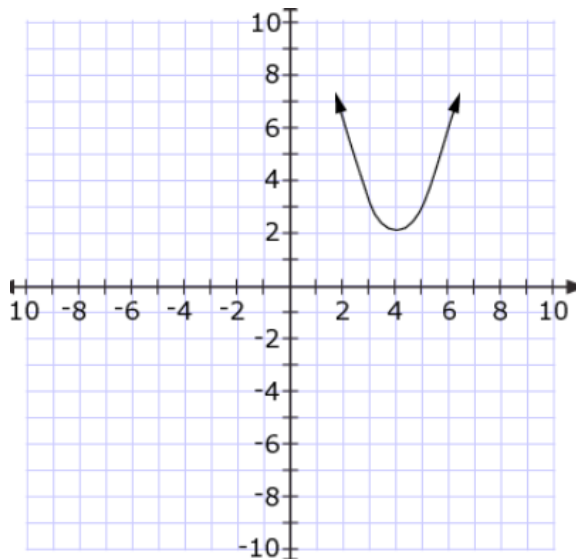
The graph of  $y = x^2$  is shown on the grid.

Drag the graph to show  $y = (x - 4)^2 + 2$ .



For this item, a full-credit response (1 point) includes:

- correct placement of the graph with its vertex at  $(2, 4)$



666



Consider the function

$$f(x) = x^2 - 5x - 14.$$

Which of the numbers in the chart are zeros of the function? Select Yes or No in each row.

$f(x) = x^2 - 5x - 14$		
Is this a zero of the function?	Yes	No
2		
7		
-2		
-7		

For this item, a full-credit response (2 points) includes:

- a check in the “No” column for 2  
AND
- a check in the “Yes” column for 7  
AND
- a check in the “Yes” column for -2  
AND
- a check in the “No” column for -7

For partial credit (1 point), the student correctly checks at least 3 boxes.

667



Drag the correct number to the exponent of  $x$  to rewrite the expression as a single term.

1  
 $\frac{5}{6}$   
 $\frac{2}{3}$   
 $\frac{1}{2}$   
 $\frac{1}{3}$   
 $\frac{1}{6}$   
0

Delete

$$\frac{\sqrt[3]{x} x^{\frac{3}{2}} x^{-\frac{5}{6}}}{\sqrt{x}} = x^{\boxed{\phantom{000}}}$$

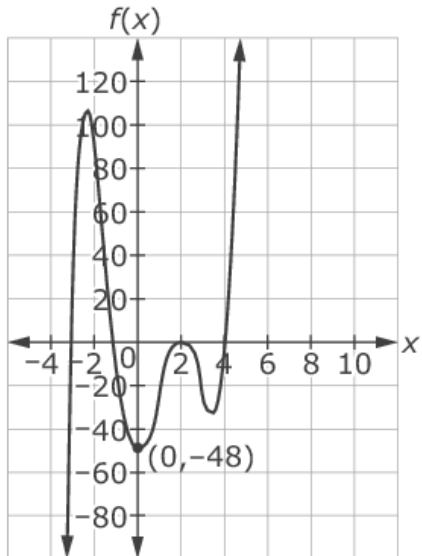
For this item, a full-credit response (1 point) includes:

- the value  $\frac{1}{2}$  in the box

663



The graph of a polynomial function is shown.



$(x + 1)$   
 $(x - 1)$   
 $(x + 2)$   
 $(x - 2)$   
 $(x + 3)$   
 $(x - 3)$   
 $(x + 4)$   
 $(x - 4)$

Delete

$f(x) =$

Create a possible function for the graph.

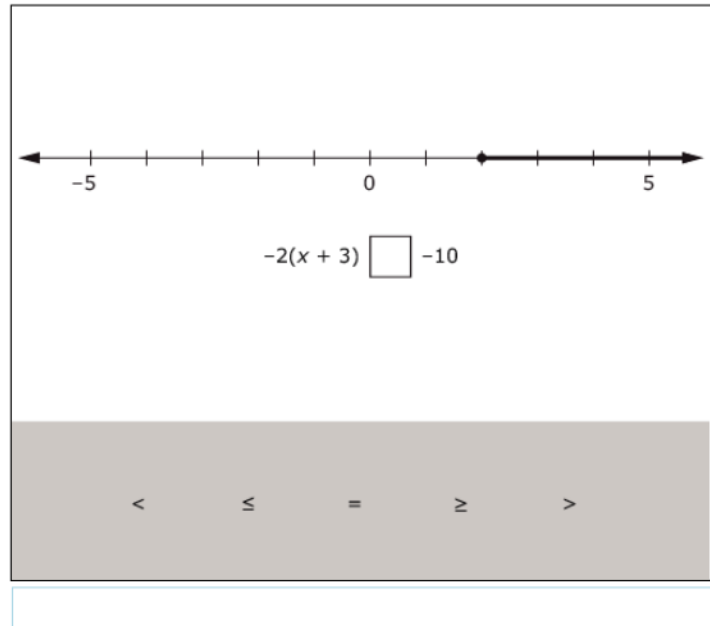
For this item, a full-credit response (1 point) includes:

- a function equivalent to  $f(x) = (x - 2)(x - 2)(x + 1)(x + 3)(x - 4)$  by the commutative property

668



Look at the graph and the algebraic statement. Place the correct mathematical symbol in the box so that the number line displays the solution to the algebraic statement.



For this item, a full-credit response (1 point) includes:

- the symbol  $\leq$  inside the box

676



A car rental company charges customers an initial charge plus a daily charge to rent cars. The initial charge is \$30 and the daily charge is \$25.

The rental company charged Jacob \$180.

Create an equation that can be used to find the number of days,  $x$ , Jacob rented the car.

Click the buttons to create your answer.

The calculator interface includes a top row with navigation buttons (left, right, undo, redo, clear). Below is a grid of buttons for digits 1-9, 0, and a variable 'x'. The next row contains basic arithmetic operators: +, -, ×, ÷. The third row contains comparison operators: <, ≤, =, ≥, >. The fourth row contains advanced mathematical functions: fraction, square, cube, parentheses, absolute value, square root, nth root, π, and i. The bottom row contains trigonometric functions: sin, cos, tan, arcsin, arccos, and arctan.

For this item, a full-credit response (1 point) includes:

- a correct equation, such as  $25x + 30 = 180$

677

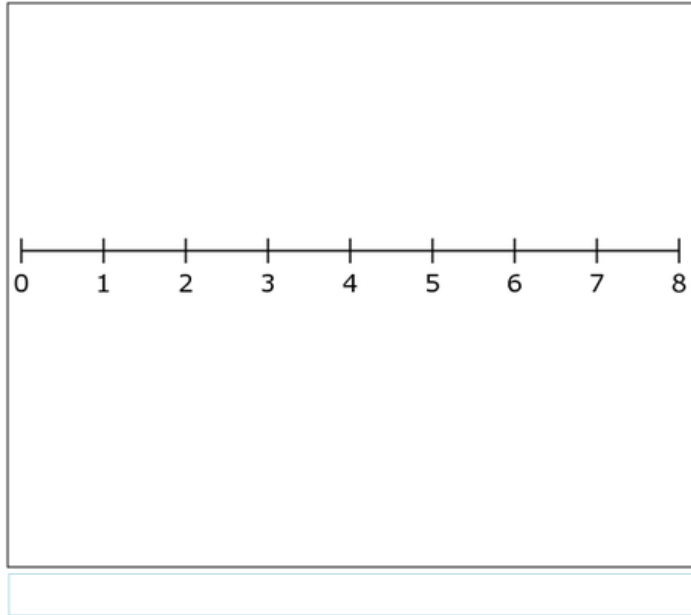


The table shows several inputs and outputs for two functions,  $f$  and  $g$ , that are both continuous on the interval 0 to 8.

$x$	$f(x)$	$g(x)$
0	-5	120
1	-4	103
2	-1	86
3	4	69
4	11	52
5	20	35
6	31	18
7	44	1
8	59	16

There is exactly one solution for which  $f(x) = g(x)$ .

Click the number line to show the unit interval for  $x$  in which the solution to  $f(x) = g(x)$  must lie.



For this item, a full-credit response (1 point) includes:

- the interval  $[5, 6]$  selected



The \$1000 prize for a lottery is to be divided evenly among the winners. Initially there are  $x$  winners, but then one more winner comes forward, causing each winner to receive \$50 less.

681



Create an equation that represents the situation and can be used to solve for  $x$ , the initial number of winners.

← → ↶ ↷ ✖

1	2	3	x							
4	5	6	+	-	×	÷				
7	8	9	<	≤	=	≥	>			
0	.	-	$\frac{\square}{\square}$	$\square^\square$	( )		$\sqrt{\square}$	$\sqrt[\square]{\square}$	$\pi$	i
			sin	cos	tan	arcsin	arccos	arctan		

For this item, a full-credit response (1 point) includes:

- a correct equation, such as  $\frac{1000}{x} = \frac{1000}{(x+1)} + 50$

**661**

Six radical equations are shown.

Select all the equations that have integer solutions.

$$\sqrt{64} = x - 3$$

$$\sqrt{39} - 3 = x$$

$$x - \sqrt{5} = \sqrt{20}$$

$$\sqrt{3x} = 75$$

$$\sqrt{x} = \frac{\sqrt{16}}{8}$$

$$2x = \sqrt{100}$$

For this item, a full-credit response (1 point) includes:

- $\sqrt{64} = x - 3$   
AND
- $\sqrt{3x} = 75$   
AND
- $2x = \sqrt{100}$

670



An equation is shown, where  $a$ ,  $b$ , and  $c$  are integers.

$$y = a|x + b| + c$$

Kyle claims that this equation will always have two roots.

Sandy claims that this equation will always have zero roots.

A. Drag one number into each box to create an equation that supports Kyle's claim.

B. Drag one number into each box to create an equation that supports Sandy's claim.

C. Drag one number into each box to create an equation that shows that both Kyle and Sandy are incorrect.

(-5)	Delete
(-4)	<b>A. Supports Kyle's claim</b>
(-3)	$y = \square  x + \square  + \square$
(-2)	
(-1)	<b>B. Supports Sandy's claim</b>
0	$y = \square  x + \square  + \square$
1	
2	
3	<b>C. Both Kyle and Sandy are incorrect</b>
4	$y = \square  x + \square  + \square$
5	

For this item, a full-credit response (3 points) includes:

- $a$  and  $c$  having opposite signs and  $b$  being any value  
AND
- $a$  and  $c$  having the same sign and  $b$  being any value OR when  $a$  is zero and  $c$  is not zero and  $b$  being any value  
AND
- $c$  being zero and  $a$  not being zero and  $b$  being any value

For example,

- $y = 3|x + 2| + (-5)$   
AND
- $y = 3|x + 2| + 5$   
AND
- $y = 3|x + 2| + 0$

For partial credit, the student completes each task for 1 point each.

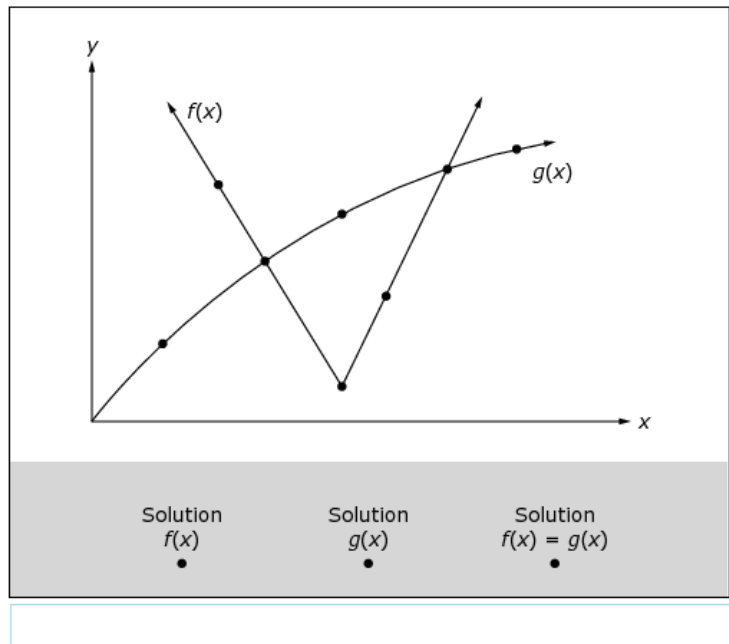
673



The graphs of  $y = f(x)$  and  $y = g(x)$  are shown.

Drag points onto the coordinate grid to show

- a solution for  $y = f(x)$  only,
- a solution for  $y = g(x)$  only, and
- a solution for  $f(x) = g(x)$ .



For this item, a full-credit response (2 points) includes:

- "Solution  $f(x)$ " on the line  $f(x)$   
AND
- "Solution  $g(x)$ " on the line  $g(x)$   
AND
- "Solution  $f(x) = g(x)$ " on the intersection of line  $f(x)$  and line  $g(x)$

For partial credit (1 point), the student places "Solution  $f(x) = g(x)$ " correctly or the student places both of the other points correctly.

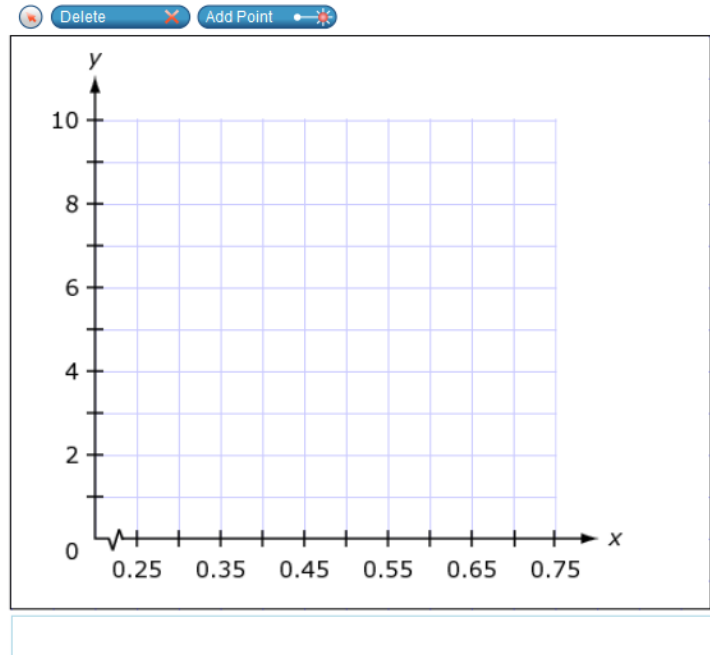
674



An equation is shown.

$$y = \frac{3}{\sqrt{x}}$$

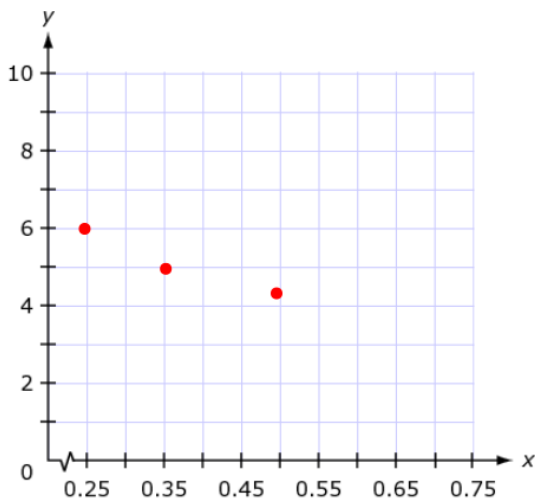
Use the Add Point tool to plot three solutions to this equation on the coordinate grid.



For this item, a full-credit response (1 point) includes:

- three points correctly plotted on the curve of  $y = \frac{3}{\sqrt{x}}$

For example,



682



Consider triangle  $ABC$ , where angle  $C$  is a right angle.

Drag possible measures of angle  $A$  into the correct column.

$\cos A < \sin A$	$\cos A = \sin A$	$\cos A > \sin A$
Possible Measures of Angle $A$		
$5^\circ$	$25^\circ$	$15^\circ$
$55^\circ$	$65^\circ$	$85^\circ$
$75^\circ$	$35^\circ$	$45^\circ$

For this item, a full-credit response (2 points) includes:

- $55^\circ$ ,  $65^\circ$ ,  $75^\circ$ , and  $85^\circ$  in the " $\cos A < \sin A$ " column  
AND
- $45^\circ$  in the " $\cos A = \sin A$ " column  
AND
- $5^\circ$ ,  $15^\circ$ ,  $25^\circ$ , and  $35^\circ$  in the " $\cos A > \sin A$ " column

For partial credit (1 point), the student correctly fills out 2 columns.

684



Given:

$$\sqrt{(3x + 1)} - \sqrt{(ax + b)} = 0$$

Select values of  $a$  and  $b$  to complete the statements about the solutions to the given equation.

-5  
-4  
-3  
-2  
-1  
0  
1  
2  
3  
4  
5

Delete

The equation has no solutions when

$$a = \square \text{ and } b = \square$$

The equation has an infinite number of solutions when

$$a = \square \text{ and } b = \square$$

When  $a = 1$  and  $x = 2$ 

$$b = \square$$

For this item, a full-credit response (3 points) includes:

- $a = 3$  and  $b \neq 1$   
AND
- $a = 3$  and  $b = 1$   
AND
- $b = 5$

For partial credit, each correct task is worth 1 point.

202



A teacher has a classroom with 30 boys and girls. The class has both 9th and 10th graders.

The probability of a randomly selected student from the class being a female **or** in grade 9 is equal to  $\frac{19}{30}$ .

Drag tick marks into each section of the chart to show how this can be true.

Delete

**Students by Gender and Grade**

Gender	Grade 9	Grade 10
<b>Female</b>		
<b>Male</b>		

For this item, a full-credit response (1 point) includes

- 11 tally marks in the “Grade 10 Male” box  
AND
- a total of 19 tally marks in the “Grade 10 Female,” “Grade 9 Male,” and “Grade 9 Female” boxes combined

For example,

Gender	Grade 9	Grade 10
<b>Female</b>		
<b>Male</b>		



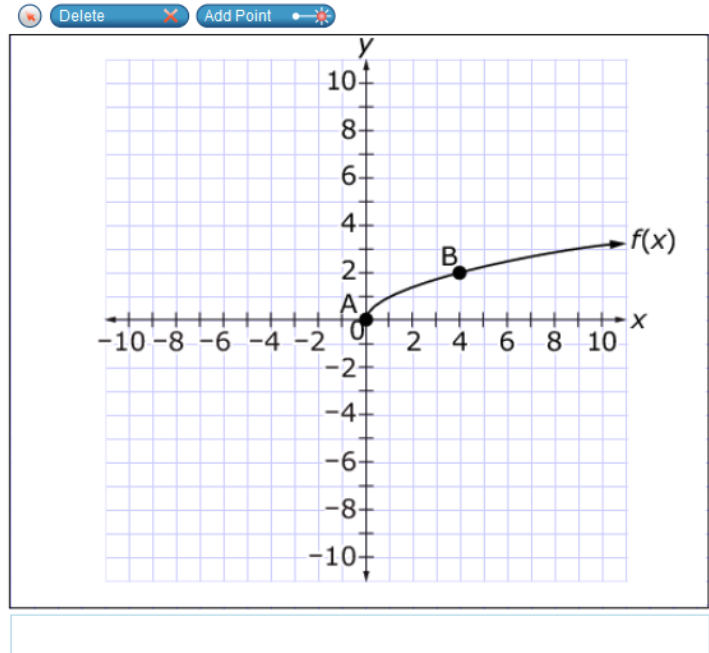
679



The graph of  $f(x) = \sqrt{x}$  is shown with points A and B plotted on the graph.

The graph of  $g(x) = \sqrt{x-2} + 3$  is a translation of the graph of  $f(x)$ .

Plot the translations of points A and B from the graph of  $f(x)$  to the graph of  $g(x)$ .



For this item, a full-credit response (2 points) includes:

- a point at (2, 3)  
AND
- a point at (6, 5)

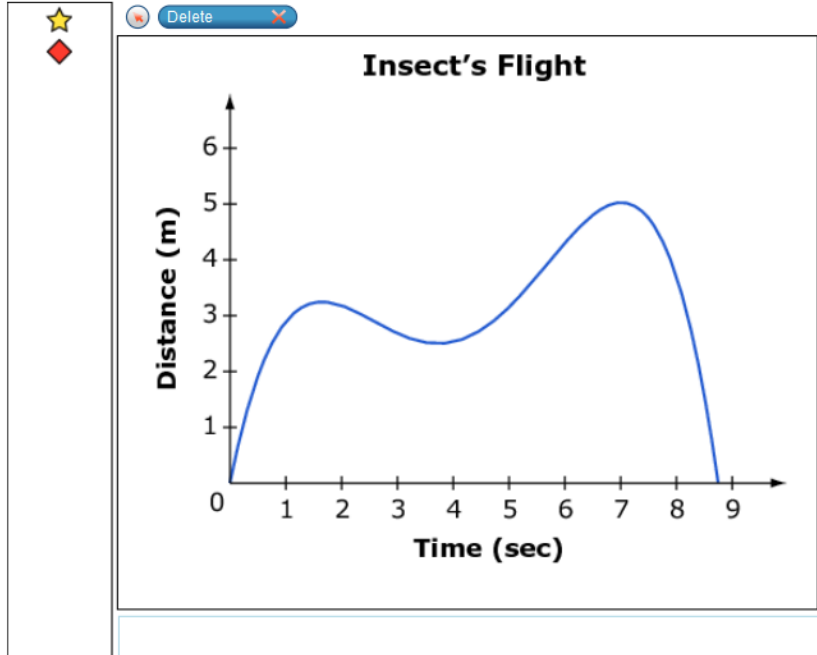
For partial credit (1 point), the student correctly plots the translation of point A or point B.

664

An insect is flying back and forth. The graph shows the insect's distance in meters from its starting point as a function of time in seconds.

Drag a gold star to mark the point on the curve where the insect is at its greatest distance from its starting point.

Drag a red diamond to mark the point on the curve where the insect returns to its starting point.



For this item, a full-credit response (2 points) includes:

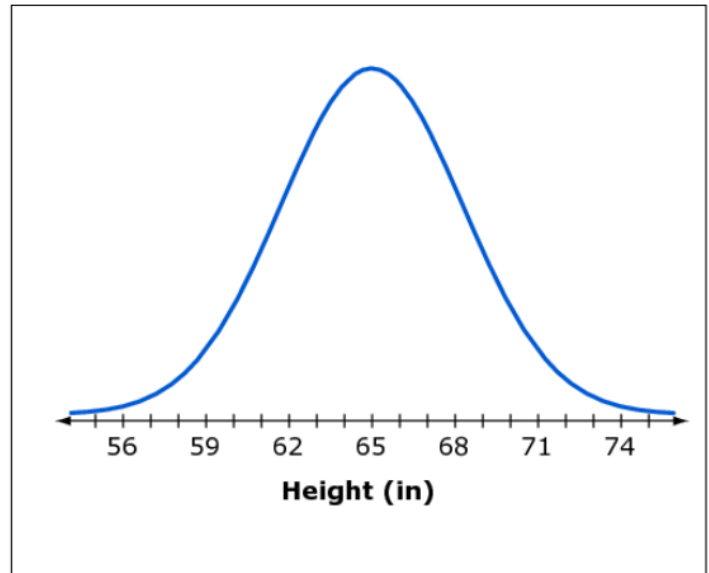
- the gold star at the point (7, 5)  
AND
- the red diamond at the point (8.75, 0)

For partial credit (1 point), the student correctly places the star or the diamond.

**665**

The height of adult women in the United States is normally distributed with a mean of 65 inches and a standard deviation of 3 inches.

Click on the number line to show a vertical line that approximates the height at which 25% of the women are shorter and 75% are taller.



For this item, a full-credit response (1 point) includes:

- a vertical line at 63 inches

203



Melissa and Carrie both drew right triangles. The length of the hypotenuse in each triangle is  $\sqrt{130}$  units.

The perimeter of Melissa's triangle is  $14 + \sqrt{130}$  units.

A. Use the Connect Line tool to draw Melissa's triangle.

The perimeter of Carrie's triangle is  $16 + \sqrt{130}$  units.

B. Use the Connect Line tool to draw Carrie's triangle.

For this item, a full-credit response (2 points) includes:

- a right triangle with legs of 3 units and 11 units under “Melissa’s Triangle” AND
- a right triangle with legs of 7 units and 9 units under “Carrie’s Triangle”

For partial credit, the student completes either task for 1 point.

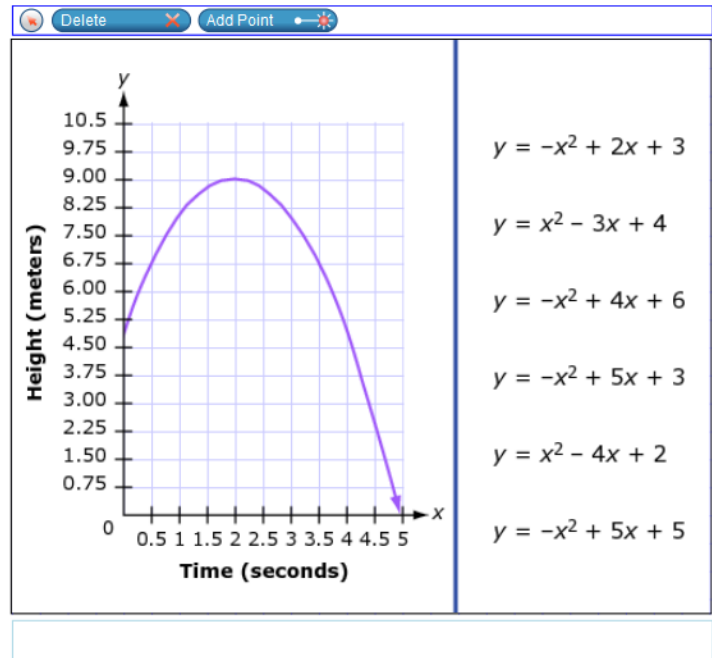
683



A ball is thrown in the air. The height of the ball in terms of time is modeled by the graph shown.

A second ball is thrown from a lower initial height and reaches a higher maximum height.

- Select an equation that represents the height of the second ball in terms of time.
- Use the Add Point tool to plot two points on the grid: the initial height of the second ball and its maximum height.



For this item, a full-credit response (2 points) includes:

- the equation  $y = -x^2 + 5x + 3$   
AND
- a point at  $(0, 3)$  and  $(2.5, 9.25)$

For partial credit, the student completes the above tasks for 1 point.

672



The figure shown is composed of a rectangular prism and half of a sphere. The diameter of the sphere is  $x$ .

Drag an expression into each box to complete an equation that represents the volume of the figure,  $V$ , in terms of  $x$ .

$V =$    $+$

$3x + 3$	$3x^3$	$x^3 + 3x^2$
$\frac{4}{3} \pi x^3$	$\frac{\pi x^3}{12}$	$\frac{\pi x^3}{6}$

For this item, a full-credit response (1 point) includes:

- the expression  $x^3 + 3x^2 + \frac{\pi x^3}{12}$

**685**

The functions  $f(x) = 500(1.015)^x$  and  $g(x) = 500(1.021)^x$  give the total amounts in two different savings accounts after  $x$  years.

How do the graphs of  $f(x)$  and  $g(x)$  compare?

- Ⓐ They have the same  $y$ -intercept, but the graph of  $f(x)$  rises more quickly over time.
- Ⓑ They have the same  $y$ -intercept, but the graph of  $g(x)$  rises more quickly over time.
- Ⓒ The function  $f(x)$  has a greater  $y$ -intercept and rises more quickly over time.
- Ⓓ The function  $g(x)$  has a greater  $y$ -intercept and rises more quickly over time.

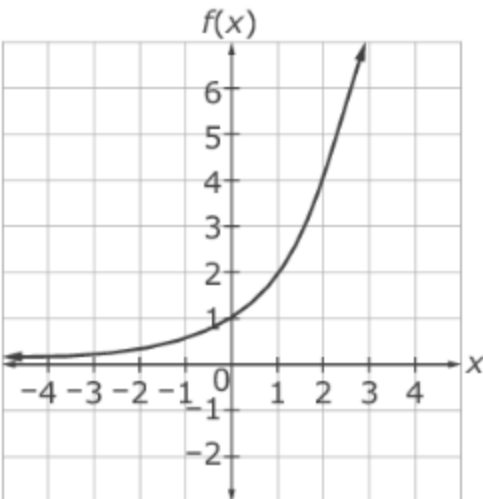
For this item, a full-credit response (1 point) includes:

- option B

686



The graph of exponential function  $f(x)$  is shown.



What is the value of  $f(6)$ ?

1	2	3
4	5	6
7	8	9
0	.	-

For this item, a full-credit response (1 point) includes:

- the value 64