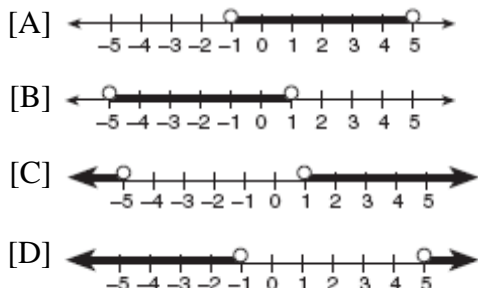


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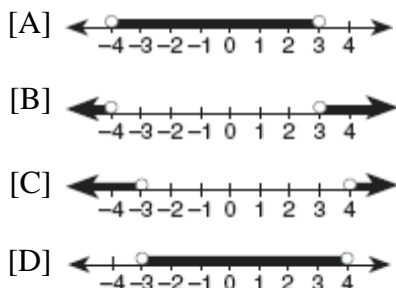
1. 010509b, P.I. A2.A.4

Which graph represents the solution set of the inequality $x^2 - 4x - 5 < 0$?



2. 010318b, P.I. A2.A.4

Which graph represents the solution set of $x^2 - x - 12 < 0$?



3. 010904b, P.I. A2.A.4

What is the solution of the inequality $x^2 - x - 6 < 0$?

- [A] $-3 < x < -2$ [B] $-3 < x < 2$
 [C] $-2 < x < 3$ [D] $1 < x < 6$

4. 080713b, P.I. A2.A.4

What is the solution set of the inequality $x^2 + 4x - 5 < 0$?

- [A] $\{x|x < -5 \text{ or } x > 1\}$
 [B] $\{x|-5 < x < 1\}$ [C] $\{x|-1 < x < 5\}$
 [D] $\{x|x < -1 \text{ or } x > 5\}$

5. 010231b, P.I. A2.A.4

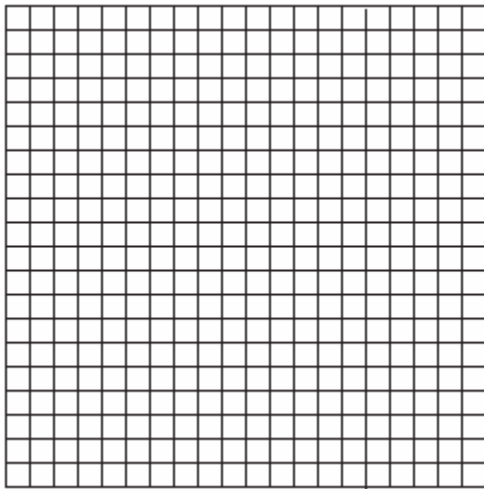
When a baseball is hit by a batter, the height of the ball, $h(t)$, at time t , $t \geq 0$, is determined by the equation $h(t) = -16t^2 + 64t + 4$. For which interval of time is the height of the ball greater than or equal to 52 feet?

NAME: _____

6. 060632b, P.I. A2.A.4

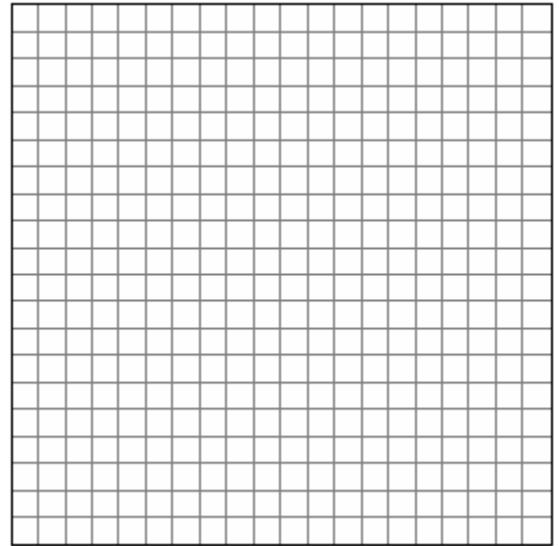
A small rocket is launched from a height of 72 feet. The height of the rocket in feet, h , is represented by the equation

$h(t) = -16t^2 + 64t + 72$, where t = time, in seconds. Graph this equation on the accompanying grid. Use your graph to determine the number of seconds that the rocket will remain at or above 100 feet from the ground. [Only a graphic solution can receive full credit.]



7. 060532b, P.I. A2.A.4

The height of a projectile is modeled by the equation $y = -2x^2 + 38x + 10$, where x is time, in seconds, and y is height, in feet. During what interval of time, to the *nearest tenth of a second*, is the projectile *at least* 125 feet above ground? [The use of the grid is optional.]

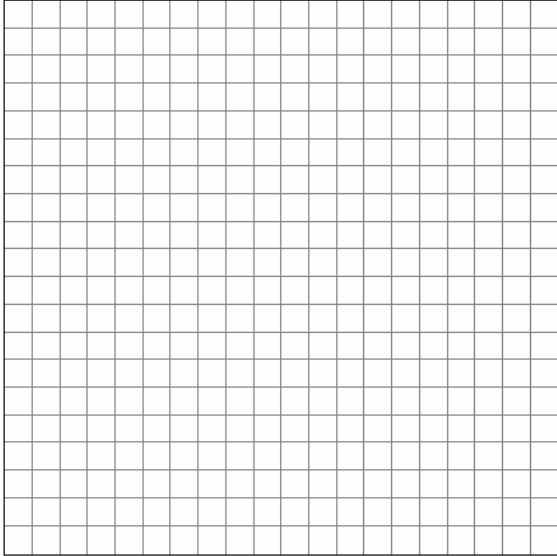


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8. 080424b, P.I. A2.A.4

The profit a coat manufacturer makes each day is modeled by the equation

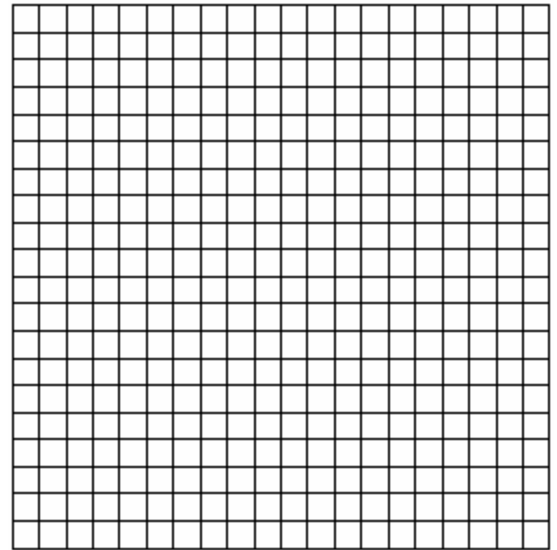
$P(x) = -x^2 + 120x - 2000$, where P is the profit and x is the price for each coat sold. For what values of x does the company make a profit? [The use of the grid is optional.]



9. 080531b, P.I. A2.A.4

The profit, P , for manufacturing a wireless device is given by the equation

$P = -10x^2 + 750x - 9,000$, where x is the selling price, in dollars, for each wireless device. What range of selling prices allows the manufacturer to make a profit on this wireless device? [The use of the grid is optional.]



[1] A

[2] D

[3] C

[4] B

[4] $1 \leq t \leq 3$, and appropriate work is shown, such as $-16t^2 + 64t + 4 \geq 52$.

[3] Appropriate work is shown, but one computational error is made.

or [3] An incorrect inequality is written, but the resulting quadratic inequality is solved appropriately.

[2] Appropriate work is shown, but more than one computational error is made.

or [2] The quadratic equation

$-16t^2 + 64t + 4 = 52$ is solved appropriately, and both solutions are found.

[1] An incorrect quadratic equation of equal difficulty is solved appropriately, but one computational error is made.

or [1] $1 \leq t \leq 3$, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[5] incorrect procedure.

[4] A correct graph is drawn, and 3.

[3] 3, and appropriate work is shown, but one graphing error is made.

or [3] A correct graph is drawn and the points 0.5 and 3.5 are identified, but the difference is not calculated.

[2] Appropriate work is shown, but two or more graphing errors are made.

or [2] Appropriate work is shown, but one conceptual error is made.

or [2] 3, but a method other than a graphic solution is used.

[1] Appropriate work is shown, but one conceptual error and one graphing error are made.

or [1] A correct graph is sketched with $t = 0$ to $t = 4$, but no further correct work is shown.

or [1] 3, but no work is shown and no graph is drawn.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[6] incorrect procedure.

- [4] $3.8 \leq x \leq 15.2$, and appropriate work is shown, such as using the quadratic formula or sketching the graph of the parabola and the line.
- [3] Appropriate work is shown, but one computational, rounding, or graphing error is made.
- or [3] $3.8 < x < 15.2$, and appropriate work is shown.
- [2] Appropriate work is shown, but two or more computational, rounding, or graphing errors are made.
- or [2] Appropriate work is shown, but one conceptual error is made.
- or [2] The graph of the parabola and the line are sketched correctly, but no further correct work is shown.
- [1] Appropriate work is shown, but one conceptual error and one computational, rounding, or graphing error are made.
- or [1] Correct substitution is made into the quadratic formula, but no further correct work is shown.
- or [1] The graph of the parabola is sketched correctly, but no further correct work is shown.
- or [1] $3.8 \leq x \leq 15.2$, but no work is shown.
- [0] $3.8 < x < 15.2$, but no work is shown.
- or [0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.
-

- [2] $20 < x < 100$, and appropriate work is shown.
- [1] Appropriate work is shown, but one computational or graphing error is made.
- or [1] Appropriate work is shown, but one conceptual error is made.
- or [1] Appropriate work is shown to solve for 20 and 100, but the solution is not expressed as a correct inequality or interval.
- or [1] $20 < x < 100$, but no work is shown.
- [0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.
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- [4] $15 < x < 60$, and appropriate work is shown, such as solving the algebraic inequality $-10x^2 + 750x - 9000 > 0$ or a graphic solution.
- [3] Appropriate work is shown, but one computational or graphing error is made.
- [3] $15 \leq x \leq 60$, and appropriate work is shown.
- [2] Appropriate work is shown, but two or more computational or graphing errors are made.
- or [2] Appropriate work is shown, but one conceptual error is made, such as solving the equation $-10x^2 + 750x - 9000 > 0$ for 15 and 60.
- or [2] An incorrect inequality of equal difficulty is solved appropriately.
- [1] Appropriate work is shown, but one conceptual error and one computational or graphing error are made.
- or [1] $15 < x < 60$, but no work is shown.
- [0] $15 \leq x \leq 60$, and no work is shown.
- or [0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.
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