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Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**YOU MAY USE A CALCULATOR!**

You have a **maximum of 90 minutes** to complete this assessment. You may write on the document.

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1. (F.IF.9)

Function 1 and Function 2 are provided.

|  |  |  |
| --- | --- | --- |
| Function 1 |  | Function2 |
|  |  | Macintosh HD:Users:teacher:Desktop:Screen Shot 2015-02-25 at 5.37.11 PM.png |

Which function has the lower minimum and where is it located?

A. Function 1 has the lower minimum located at (-1, 0).

B. Function 2 has the lower minimum located at (2, 2).

C. Function 1 has the lower minimum located at (-2, -3).

D. Function 2 has the lower minimum located at (-2, -2).

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2. (F.BF.3)

If the graph ofis translated 2 units to the right, what is the resulting function?



A.



B.



C.



D.



\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. (N.CN.8)

Which of the following quadratics has the solutions of ?



A.



B.



C.



D.



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4. (N.CN.7)

*f*(*x*)is a quadratic function having the property that its discriminant is negative. Which statement best describes the roots if *f*(*x*)=0?

A. *f*(*x*) will have no real roots.

B. *f*(*x*) will have one positive real root.

C. *f*(*x*) will have two positive real roots.

D. *f*(*x*) will have two negative real roots.

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5. (N.CN.1,2)

Which of the following expressions, when simplified, result in a negative value?

|  |  |
| --- | --- |
| I. | II. |
| III. | IV. |
| V. | VI. |
| VII. | VIII. |

1. III, IV, VII
2. I, II, V, VI, VIII
3. I, II, V
4. III, IV, VII, VIII

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6. (N.RN.2)

Simplify:



A.



B. 0

C. 8

D.



\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

7. (A.APR.1)

Two functions are depicted below.

Function 1 Function 2

*f(x) = x – 7*

|  |  |
| --- | --- |
| *x* | *g(x)* |
| 2 | 8 |
| 4 | 6 |
| 6 | 4 |
| 8 | 2 |
| 10 | 0 |

Find (*g* + *f*)(*x*)?

1. (*g* + *f*)(*x*) = 2x + 3
2. (*g* + *f*)(*x*) = 3
3. (*g* + *f*)(*x*) = *–x2* + 3
4. (*g* + *f*)(*x*) = *x2* + 3

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8. (F.LE.3)

For which interval(s) is *f*(*x*) > *g*(*x*) if *f*(*x*) = *–x* + 2 and *g*(*x*) = *x*2 – 4?

A. (,-3) and (2, )



B. (-3, 2)

C. (0, 5)

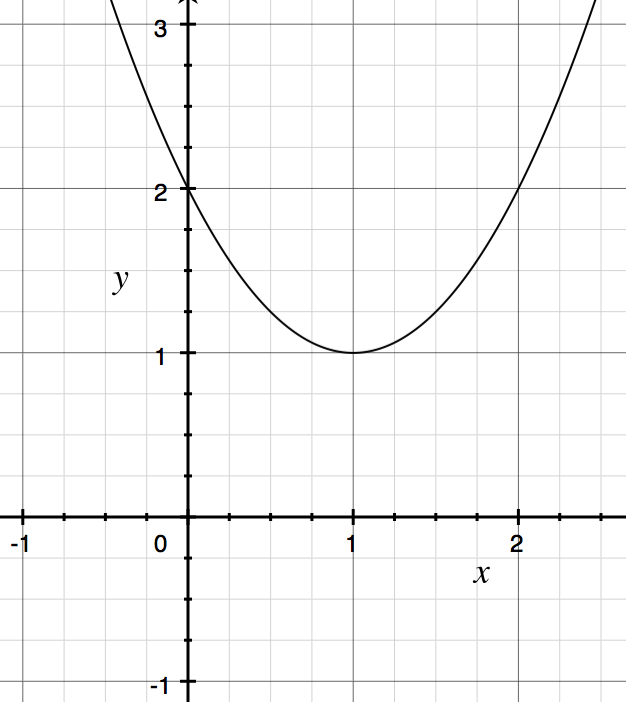
D. (, 0) and (5, )



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9. (F.IF.8a, A.SSE.3b)

Use the graph to write the general form and vertex form of the

equation for *f*(x).

***f*(x)**

A.



B.



C.



D.



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10. (A.SSE.3c)

Simplify the expression. **Express the answer so that all exponents are positive**.



A.



B. 

C. 

D. 

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11. (F.IF.8b)

The quantity of a product in a jar after time *t* can be written as the following exponential function:   
 *y* = 1000(0.03)*t*

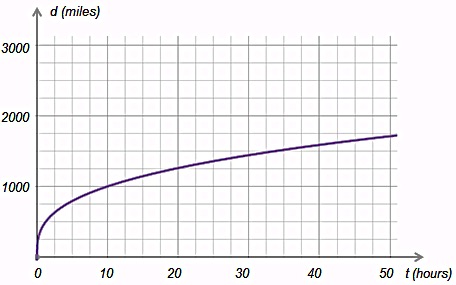
Identify the percent rate of change and state whether the function as representing exponential growth or decay.

1. percent rate of change: 1000, represents exponential decay
2. percent rate of change: 0.03, represents exponential decay
3. percent rate of change: 1000, represents exponential growth
4. percent rate of change: 0.03, represents exponential growth

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12. (F.IF.6)

A truck is traveling where someone is recording the distance that the truck is traveling every few minutes. The distance *d* traveled is a function of the time *t*:  *d*(*t*) = total distance traveled at time *t* .

  
We graph the function *d* as shown in the Figure below. 

Find the average speed between the hours 10 ≤ *t*  ≤ 35.

A. 500 miles

B. 500 miles per hour

C. miles

D. miles per hour

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13. (A.REI.4)

In the graph of *y = a*(*x - h*)*2 + k*, what do the a, h, and k represent?

A. *a* is the factor of horizontal compression or stretch and indicates whether the parabola opens up or down, the opposite of *h* is the axis of symmetry, and the opposite of *k* is the maximum or minimum y-value of the vertex.

B. *a* is the factor of vertical compression or stretch and indicates whether the parabola opens up or down, the opposite of *h* is the axis of symmetry, and *k* is the maximum or minimum y-value of the vertex.

C. *a* is the factor of vertical compression or stretch and indicates whether the parabola opens up or down, *h* is the axis of symmetry, and *k* is the maximum or minimum y-value of the vertex.

D. ais the factor of vertical compression or stretch and indicates whether the parabola opens up or down, *h* is the axis of symmetry, and the opposite of *k* is the maximum or minimum y-value of the vertex.

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14. (F.IF.4)

Of the six functions that follow, select all functions for which *y* > 0 for all values of *x.*

   I. *y =* |x|  II. *y =* |x| - 1

   III. *y =* -2  IV. *y =* x2 - 2

   V. *y =* x2 + 2  VI. *y =* 1

1. I, IV, V
2. I, II, IV, V
3. III, VI
4. V, VI

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

15. (F.BF.1)

The potential energy of an object is given by *PE* = *m g h*. If the object is thrown and its height *h* is a function of time such that *h*(*t*) = *t*– 3.What is the **potential energy of the object in terms of time**?

1. *PE(t) = mg(t – 3)*
2. *PE(t) = mgh(t)*
3. *PE(t) = mght*
4. *PE(t) = mgh(t–3)*

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_