NAME:_____

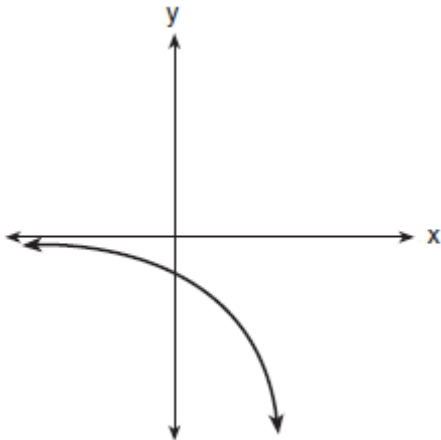*A2.A.52: Identify relations and functions, using graphs*
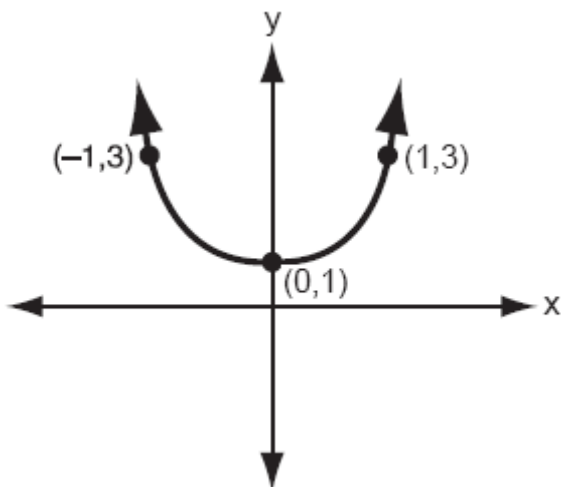
1. 080901b, P.I. A2.A.52
   Which equation is represented by the accompanying graph?

   [A] $y = x^2 - 2$ [B] $y = -2^x$

   [C] $y = 2^{-x}$ [D] $y = 2^x$

2. 010801b, P.I. A2.A.52
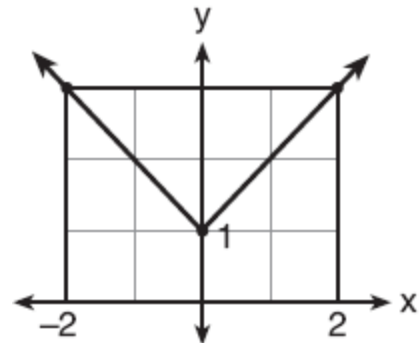   Which equation is represented by the accompanying graph?

   (−1,3)   (1,3)

   (0,1)

   [A] $y = x^2$ [B] $y = 2(x^2 + 1)$

   [C] $y = 2x^2$ [D] $y = 2x^2 + 1$

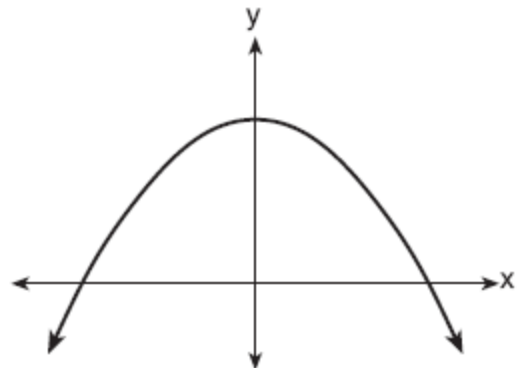3. 080707b, P.I. A2.A.52
   Which equation represents the function shown in the accompanying graph?

   −2   2

   [A] $f(x) = |x + 1|$ [B] $f(x) = |x| - 1$

   [C] $f(x) = |x - 1|$ [D] $f(x) = |x| + 1$

4. 060703b, P.I. A2.A.52
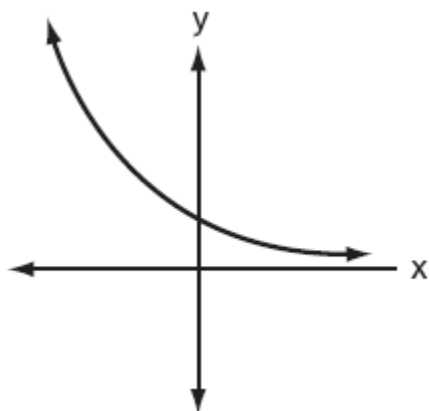   Which equation is best represented by the accompanying graph?

   [A] $y = 6x + 1$ [B] $y = 6x^2$

   [C] $y = 6^x$ [D] $y = -x^2 + 1$

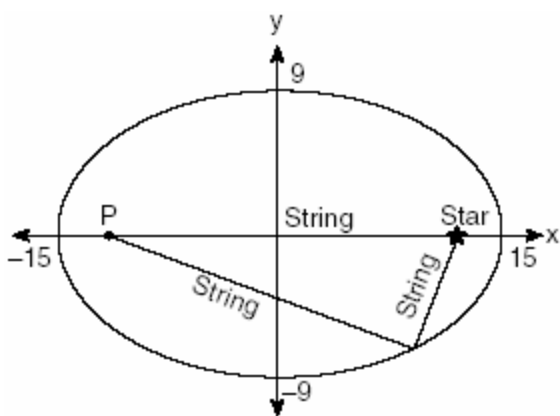5. 010701b, P.I. A2.A.52
Which equation best represents the
accompanying graph?

[A] $y = 2^x$ [B] $y = 2^{-x}$

[C] $y = -2^x$ [D] $y = x^2 + 2$

6. 010517b, P.I. A2.A.52
The accompanying diagram shows the
construction of a model of an elliptical orbit
of a planet traveling around a star. Point P
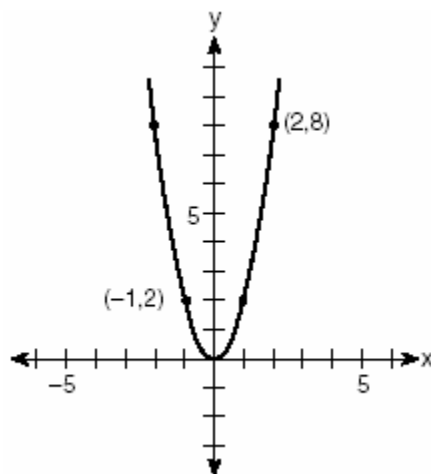and the center of the star represent the foci of
the orbit.

Which equation could represent the relation
shown?

[A] $\dfrac{x^2}{15} + \dfrac{y^2}{9} = 1$ [B] $\dfrac{x^2}{225} + \dfrac{y^2}{81} = 1$

[C] $\dfrac{x^2}{81} + \dfrac{y^2}{225} = 1$ [D] $\dfrac{x^2}{15} - \dfrac{y^2}{9} = 1$

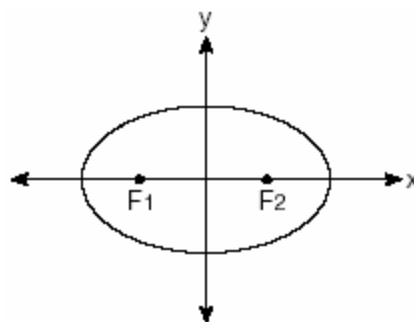7. 060404b, P.I. A2.A.52
Which quadratic function is shown in the
accompanying graph?

[A] $y = 2x^2$ [B] $y = -2x^2$

[C] $y = -\dfrac{1}{2}x^2$ [D] $y = \dfrac{1}{2}x^2$

8. 010410b, P.I. A2.A.58
The accompanying diagram shows the
elliptical orbit of a planet. The foci of the
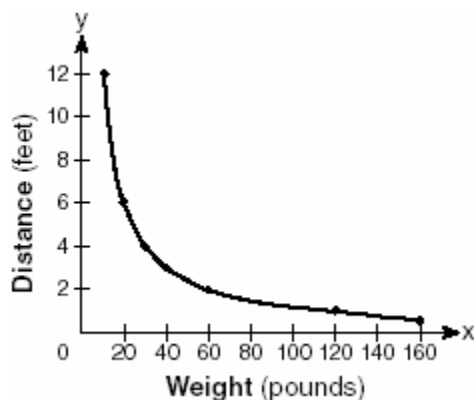elliptical orbit are F_1 and F_2.

If a, b, and c are all positive and $a \neq b \neq c$,
which equation could represent the path of the
planet?

[A] $x^2 + y^2 = c^2$ [B] $ax^2 + by^2 = c^2$

[C] $ax^2 - by^2 = c^2$ [D] $y = ax^2 + c^2$

9. 080312b, P.I. A2.A.52
The accompanying graph shows the relationship between a person's weight and the distance that the person must sit from the center of a seesaw to make it balanced.
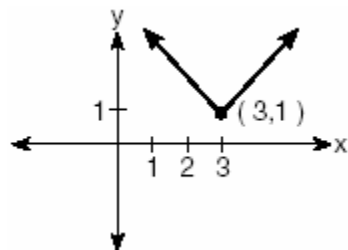

Which equation best represents this graph?

[A] $y = \dfrac{120}{x}$ [B] $y = -120x$

[C] $y = 12x^2$ [D] $y = 2\log x$

10. 060314b, P.I. A2.A.52
Which equation is represented by the accompanying graph?
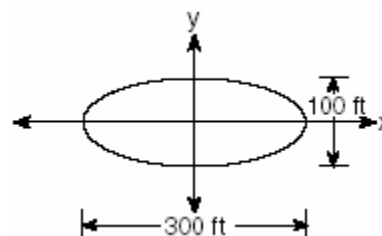

[A] $y = |x - 3| + 1$ [B] $y = |x| - 3$

[C] $y = |x + 3| - 1$ [D] $y = (x - 3)^2 + 1$

11. 060311b, P.I. A2.A.52
The accompanying diagram represents the elliptical path of a ride at an amusement park.
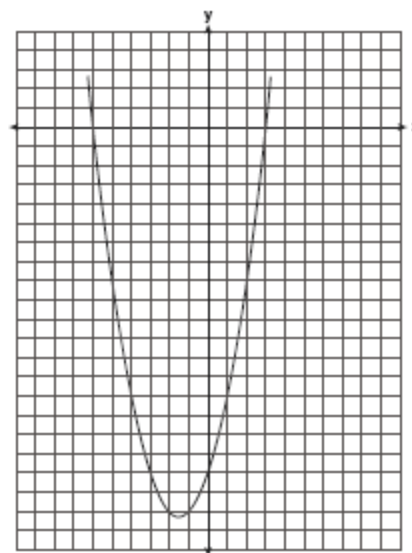

Which equation represents this path?

[A] $x^2 + y^2 = 300$ [B] $\dfrac{x^2}{150^2} - \dfrac{y^2}{50^2} = 1$

[C] $y = x^2 + 100x + 300$

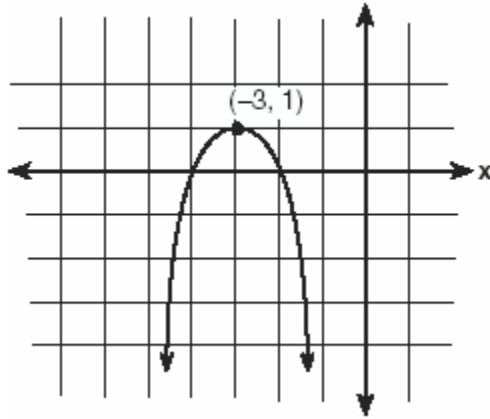[D] $\dfrac{x^2}{150^2} + \dfrac{y^2}{50^2} = 1$

12. 010328a, P.I. A2.A.52
The graph of a quadratic equation is shown in the accompanying diagram. The scale on the axes is a unit scale. Write an equation of this graph in standard form.

13. 010303b, P.I. A2.A.52

Which equation represents the parabola shown in the accompanying graph?
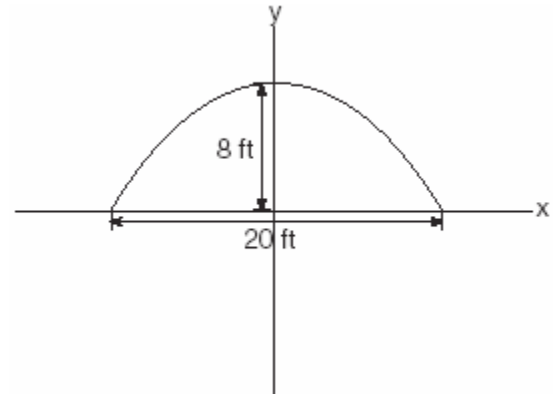

[A] $f(x) = -(x+3)^2 + 1$

[B] $f(x) = (x+1)^2 - 3$

[C] $f(x) = -(x-3)^2 + 1$

[D] $f(x) = -(x-3)^2 - 3$

14. 080206b, P.I. A2.A.52

An architect is designing a building to include an arch in the shape of a semi-ellipse (half an ellipse), such that the width of the arch is 20 feet and the height of the arch is 8 feet, as shown in the accompanying diagram.
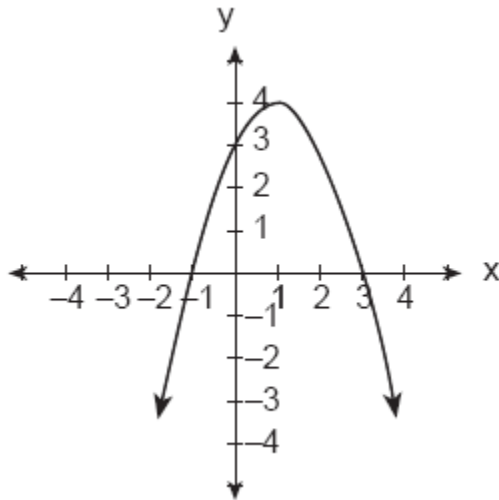

Which equation models this arch?

[A] $\dfrac{x^2}{400} + \dfrac{y^2}{64} = 1$ [B] $\dfrac{x^2}{100} + \dfrac{y^2}{64} = 1$

[C] $\dfrac{x^2}{64} + \dfrac{y^2}{100} = 1$ [D] $\dfrac{x^2}{64} + \dfrac{y^2}{400} = 1$
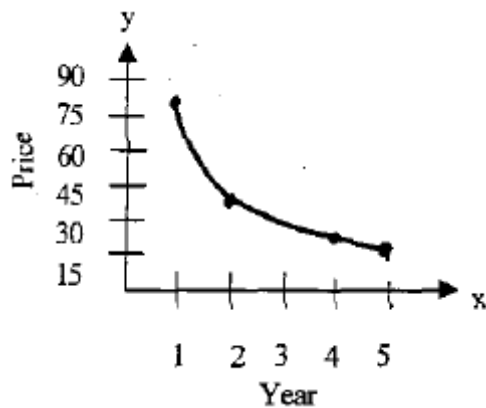
15. 080017a, P.I. A2.A.52

Which is an equation of the parabola shown in the accompanying diagram?

[A] $y = -x^2 + 2x + 3$ [B] $y = x^2 + 2x + 3$

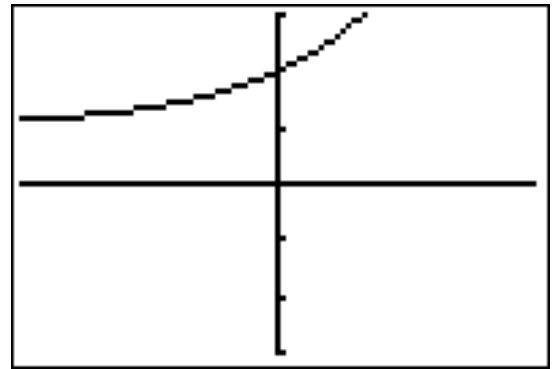[C] $y = x^2 - 2x + 3$ [D] $y = -x^2 - 2x + 3$

16. fall9913b, P.I. A2.A.52

The price of a certain stock has decreased over 5 years, as shown in the graph below. Which of the following equations best represents this graph?

[A] $y = -25x$ [B] $y = 60x^2$

[C] $y = 63 \log x$ [D] $y = \dfrac{80}{x}$

17. fall9902b, P.I. A2.A.52

The graph below can be represented by which equation?

[A] $y = x^2 + 2$ [B] $y = 2^x + 1$

[C] $y = 2^{x+1}$ [D] $y = 2^x$

A2.A.52: Identify relations and functions, using graphs

[1] B

[2] D

[3] D

[4] D

[5] B

[6] B

[7] A

[8] B

[9] A

[10] A

[11] D

[3] $y = x^2 + 3x - 18$, and appropriate work leading from the roots to the equation is shown.

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

or [2] $x^2 + 3x - 18 = 0$, but appropriate work is shown.

or [2] Only the correct factors $(x + 6)$ and $(x - 3)$ are shown.

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

or [1] Only the roots −6 and 3 are shown, such as $x = -6, x = 3$.

or [1] $y = x^2 + 3x - 18$, 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

[12] incorrect procedure.

[13] A

[14] B

[15] A

[16] D