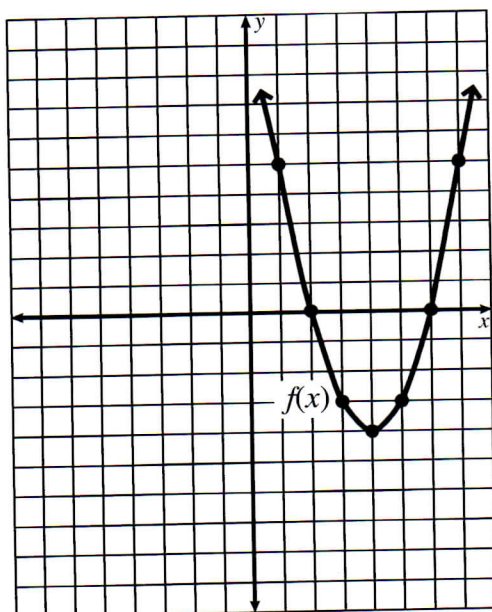


5. Given the graph below, write the function for $f(x)$ in standard form.



Match the letter of the choice most closely associated with the term given.

6. _____ parent quadratic function

7. _____ coordinate of the vertex

8. _____ quadratic formula

A. $y = x^2$

B. $-\frac{b}{2a}$

C. $b^2 - 4ac$

D. $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

E. $y = a(x - h)^2 + k$

(more)

Use the function given to answer problems 12-17.

$$y = x^2 - 4x - 32$$

12. Determine whether the parabola opens up or down; explain your conclusion.
13. Identify the axis of symmetry and the vertex.
14. Identify the minimum.
15. Find the x -intercepts by factoring.
16. Show how the value of the discriminant supports your conclusion(s) from problem 15.
17. How does the axis of symmetry relate to the x -intercepts?

(more)

21. Describe and correct the error.

$$2b^2 + b = 6$$

$$b^2 + \frac{1}{2}b = 3$$

$$b^2 + \frac{1}{2}b + \left(\frac{1}{2}\right)^2 = 3 + \left(\frac{1}{2}\right)^2$$

$$\left(b + \frac{1}{2}\right)^2 = 3 + \frac{1}{4}$$

$$b + \frac{1}{2} = \pm \sqrt{\frac{13}{4}}$$

$$b = \frac{-1}{2} \pm \frac{\sqrt{13}}{2}$$

$$b = \frac{-1 \pm \sqrt{13}}{2}$$

Solve the following word problems.

22. William, a logistician, needs to route a freight train that is 20 feet at its tallest point and 10 feet at its widest point within 3 days. The most direct path includes a single-track tunnel that needs 24 hour notice prior to use. If the tunnel is roughly modeled by $f(x) = -0.1x^2 + 3.2x - 3.5$, should William make arrangements for the train to use the tunnel? Show work that supports your conclusion.

(more)

A batter hits a fly ball. A scout in the stands makes the following observations.

Time (seconds)	.75	1.5	2	2.75	3.25	4.75
Height (feet)	77	133	160	187	194	169

24. Circle the type of function that best models this data.

Linear

Exponential

Quadratic

Other

25. Use a graphing calculator to perform the regression for the best-fit equation. Write the resulting equation below, rounding to the nearest hundredth.

26. Determine the initial velocity of the baseball and the height of the ball when hit. Round to the nearest hundredth.

27. Calculate how many seconds an outfielder has to position himself for the catch if he intends to catch the ball 6 feet above the ground. Show your work and round to the nearest hundredth.

FILL IN YOUR NAME AND THE OTHER REQUIRED INFORMATION ON EACH PAGE OF THE EXAM AND MAIL THE EXAM TO THE SCHOOL.