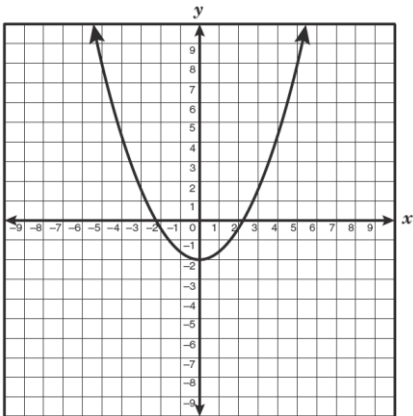


Objective 5 - Page 1 of 5

The graph of the equation $y = 0.4x^2 - 2$ is shown below. If the graph is translated 3 units up, what will be the equation of the resulting graph?



- A $y = 0.4x^2 + 1$
- B $y = 0.7x^2 - 2$
- C $y = 0.4x^2 + 5$
- D $y = 3.4x^2 - 2$

July '06 Obj 5 - # 1

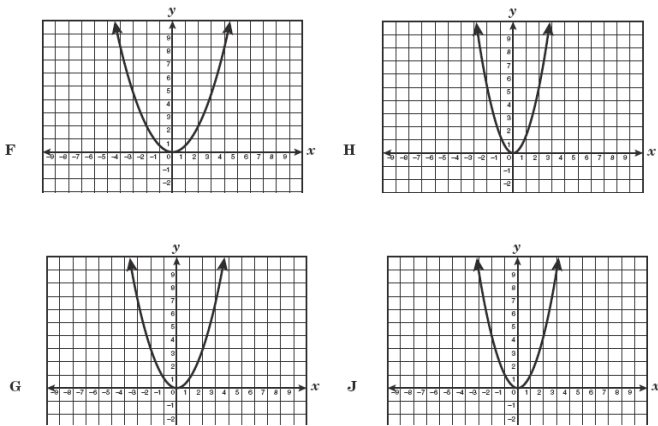
Look at the equations shown below. Which of the following statements is true for the graphs of all the equations given?

$$y = \frac{4}{5}x^2 + 3, \quad y = \frac{4}{5}x^2, \quad y = \frac{4}{5}x^2 - 5, \quad y = \frac{4}{5}x^2 + \frac{3}{5}$$

- A The graphs are congruent and open downward.
- B The graphs open upward and are symmetrical about the y-axis.
- C The graphs are congruent and are listed from narrowest to widest.
- D The graphs open downward and are symmetrical about the y-axis.

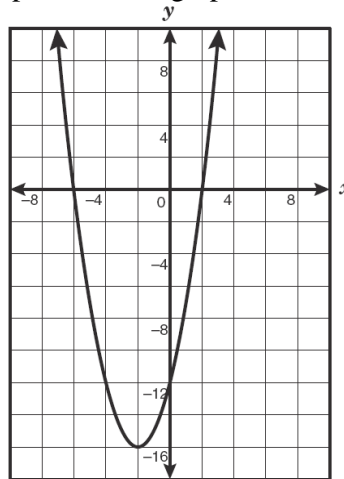
July '06 Obj 5 - # 51

The graphs below represent functions of the form $y = ax^2$. In which of the following graphs does a have the smallest value?



July '06 Obj 5 - # 12

Which of the following polynomial equations best represents this graph?



- A $(x + 6)(x - 2) = y$
- B $(x - 2)(x - 16) = y$
- C $(x - 6)(x + 2) = y$
- D $(x + 2)(x + 16) = y$

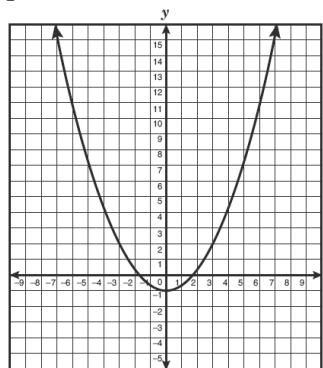
July '06 Obj 5 - # 53

The mass of Earth is close to 5.97×10^{24} kilograms, and the mass of Venus is close to 4.87×10^{24} kilograms. What is the combined mass of both planets?

- A 1.08×10^{25} kg
- B 2.91×10^{49} kg
- C 1.08×10^{48} kg
- D 1.10×10^{24} kg

July '06 Obj 5 - # 23

The graph of a function of the form $y = ax^2 + c$ is shown below. If the graph is translated only up or down to include the ordered pair (6, 7), which of the following equations best represents the resulting graph?



- A $y = -\frac{1}{3}x^2 + 3$
- B $y = \frac{1}{3}x^2 + 1$
- C $y = -\frac{1}{3}x^2 - 10$
- D $y = \frac{1}{3}x^2 - 5$

April '06 Obj 5 - # 7

Objective 5 - Page 2 of 5

What is the simplified form of $\frac{(-6a^3b^5)(2a^2b^3)}{-18a^4b^8c^3}$?

- F $-\frac{2a^2b}{3c^3}$
- G $\frac{2a}{3c^3}$
- H $\frac{2a^2b}{3bc^3}$
- J $-\frac{2ab}{3c^3}$

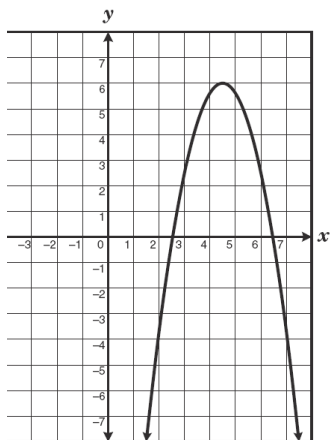
April '06 Obj 5 - # 16

How does the graph of $y = -\frac{3}{4}x^2$ differ from the graph of $y = \frac{4}{3}x^2$?

- F The graph of $y = -\frac{3}{4}x^2$ opens downward and is wider than the graph of $y = \frac{4}{3}x^2$.
- G The graph of $y = -\frac{3}{4}x^2$ opens upward and is wider than the graph of $y = \frac{4}{3}x^2$.
- H The graph of $y = -\frac{3}{4}x^2$ opens upward and is narrower than the graph of $y = \frac{4}{3}x^2$.
- J The graph of $y = -\frac{3}{4}x^2$ opens downward and is narrower than the graph of $y = \frac{4}{3}x^2$.

April '06 Obj 5 - # 46

Which points best represent the roots of the graphed quadratic equation shown below?



- F $(6\frac{1}{2}, 0)$ and $(4\frac{1}{2}, 6)$
- G $(4\frac{1}{2}, 6)$ and $(2\frac{1}{2}, 0)$
- H $(2\frac{1}{2}, 0)$ and $(6\frac{1}{2}, 0)$
- J $(0, 2\frac{1}{2})$ and $(0, 6\frac{1}{2})$

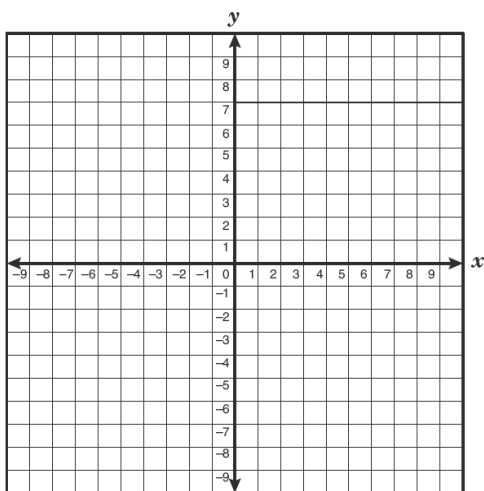
April '06 Obj 5 - # 18

Which of the following functions of the form $y = ax^2$ produces the widest graph and opens upward?

- F $y = -\frac{1}{4}x^2$
- G $\frac{6}{5}x^2$
- H $-\frac{4}{3}x^2$
- J $\frac{7}{3}x^2$

Feb '06 Obj 5 - # 2

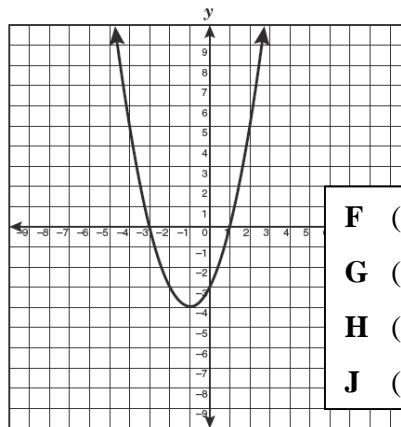
Which of the following is the vertex of the graph of the equation $y = -x^2 + 2x + 3$?



- A (0, 3)
- B (-1, 0)
- C (1, 4)
- D (3, 0)

April '06 Obj 5 - # 43

The graph of the function $y = x^2 + 2x - 3$ is shown below. What are the y-intercept and x-intercepts of the function?



- F (0, -3), (0, 1), (-3, 0)
- G (0, -3), (1, 0), (-3, 0)
- H (-3, 0), (1, 0), (-3, 1)
- J (1, -3), (0, 1), (0, -3)

Feb '06 Obj 5 - # 6

Objective 5 - Page 3 of 5

Jupiter has an equatorial diameter of about 8.9×10^4 miles, which is about 11.2 times as great as Earth's equatorial diameter. According to this information, what is Earth's approximate equatorial diameter in scientific notation?

- F** 2.3×10^3 mi
- G** 9.97×10^5 mi
- H** 7.95×10^3 mi
- J** 2.01×10^2 mi

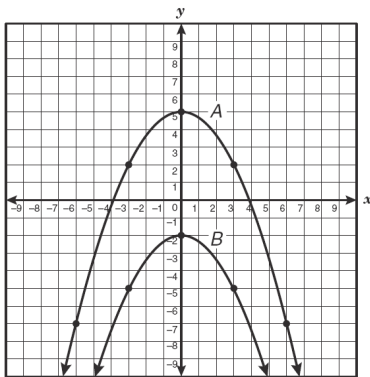
Feb '06 Obj 5 - # 22

- A** The ball reached a maximum height of about 16 feet after traveling a horizontal distance of approximately 33 yards.
- B** The ball reached a maximum height of about 13 feet after traveling a horizontal distance of approximately 14 yards.
- C** The ball was thrown from a height of approximately 6 feet above the ground and traveled a horizontal distance of approximately 20 yards before it reached its maximum height.
- D** The ball was thrown from a height of approximately 7 feet above the ground and traveled a horizontal distance of approximately 10 yards before it reached its maximum height.

Feb '06 Obj 5 - # 59 (cont)

The grid below shows parabolas *A* and *B* of the form $y = ax^2 + c$. How are parabolas *A* and *B* related?

- F** Parabola *A* is narrower than parabola *B*.
- G** Parabola *A* is wider than parabola *B*.



- H** All the points on parabola *A* are 7 units below the corresponding points on parabola *B*.
- J** All the points on parabola *A* are 7 units above the corresponding points on parabola *B*.

Feb '06 Obj 5 - # 36

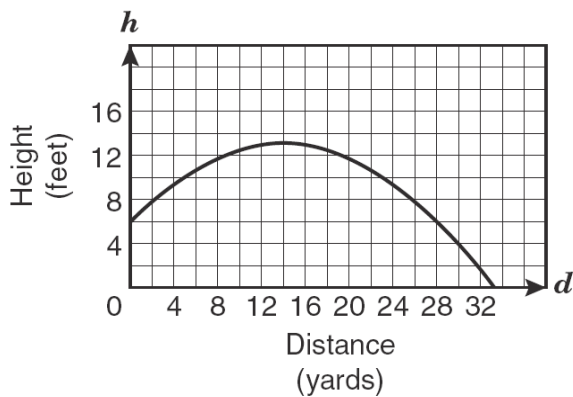
Which expression best represents

$$(3a^2b^3c)(-3ab)(-2a^3bc^3)?$$

- F** $18a^6b^5c^4$
- G** $-18a^6b^3c^3$
- H** $18a^6b^9c^4$
- J** $-8a^6b^5c^4$

Dec '06 Obj 5 - # 4

The graph represents the relationship between the height of a ball and the distance it traveled after the ball was thrown. What conclusion can be drawn from the graph about this relationship?



Feb '06 Obj 5 - # 59

Which quadratic function has a vertex below the origin and opens upward?

- A** $y = -x^2 + 3$
- B** $y = -x^2 - 1$
- C** $y = x^2 + 5$
- D** $y = x^2 - 2$

Dec '06 Obj 5 - # 7

Objective 5 - Page 4 of 5

What is the solution set for the equation

$$4x^2 + 11x - 10 = -7?$$

- F** $\{-3, 0.25\}$
- G** $\{-3.47, 0.72\}$
- H** $\{3, -0.25\}$
- J** $\{-3.85, 1.1\}$

Dec '06 Obj 5 - # 24

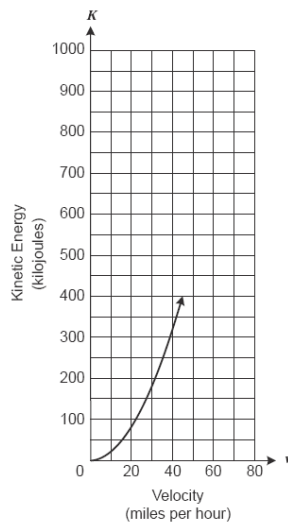
How does the graph of $y = 7x^2$ differ from the graph of $y = x^2$?

- A** The vertex of the graph of $y = 7x^2$ is 7 units higher.
- B** The vertex of the graph of $y = 7x^2$ is 7 units lower.
- C** The graph of $y = 7x^2$ is wider.
- D** The graph of $y = 7x^2$ is narrower.

Oct '06 Obj 5 - # 3

The graph shows the relationship between a 1-ton car's kinetic energy, K , and its velocity, v . If the kinetic energy of the car is proportional to the square of its velocity, then its kinetic energy when traveling at 60 miles per hour is about —

- A** 320 kilojoules
- B** 480 kilojoules
- C** 720 kilojoules
- D** 1280 kilojoules



Dec '06 Obj 5 - # 31

Which expression describes the area in square units of a rectangle that has a length of $10x^3y^4$ units and a width of $5x^2y$ units?

- F** $2x^5y^4$
- G** $15x^5y^5$
- H** $50x^5y^4$
- J** $50x^5y^5$

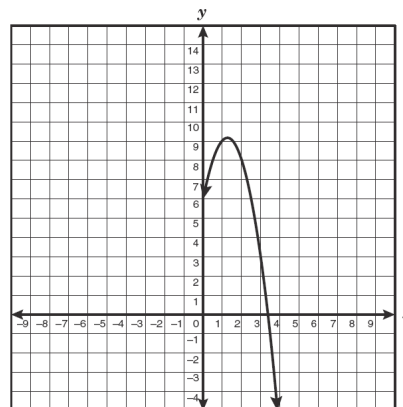
Oct '06 Obj 5 - # 4

The formula for the volume of a cylinder with a height of 5 units can be represented as $y = 5\pi x^2$, where x represents the radius. If the cylinder's height is tripled, what is the effect on the graph of y as a function of x ?

- F** The graph is translated up.
- G** The graph remains the same.
- H** The graph becomes narrower.
- J** The graph becomes wider.

Dec '06 Obj 5 - # 44

Part of the graph of a quadratic equation is shown below. If the line of symmetry for this quadratic equation is $x = 1.25$, between which two integers will the other part of the graph intersect the x -axis?



- A** -4 and -3
- B** -3 and -2
- C** -2 and -1
- D** -1 and 0

Oct '06 Obj 5 - # 25

What are the zeros of the function

$$y = (x + 4)(x - 6)?$$

- A** -4 and 6
- B** -3 and 2
- C** 4 and -6
- D** -2 and 3

Oct '06 Obj 5 - # 43

If the graph of the equation $y = x^2 + 1$ is translated 3 units down, what will be the equation of the new graph?

- F** $y = (x - 3)^2 + 1$
- G** $y = x^2 - 2$
- H** $y = x^2 + 4$
- J** $y = -3x^2 + 1$

Oct '06 Obj 5 - # 58