**HOMEWORK EXERCISES (TIME: 10 MINUTES)**

23. The equation of an ellipse, in standard form, is given by $4x^2 + y^2 - 24x + 4y - 8 = 0$. What is the center of the ellipse in the standard (x, y) coordinate plane?

   (A) $(3, -2)$
   (B) $(-3, 2)$
   (C) $(2, -3)$
   (D) $(-2, 3)$
   (E) $(4, 1)$

24. If the equation $y = x^2 - 7$ is graphed in the standard (x, y) coordinate plane, which of the following would represent the graph of the equation?

   (A) A hyperbola
   (B) An ellipse
   (C) A circle
   (D) A parabola
   (E) Two intersecting lines
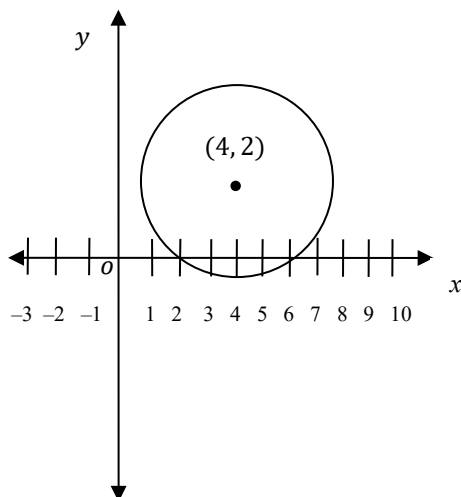
25. What is the equation of the circle shown above in the standard (x, y) coordinate plane centered at $(4, 2)$ and passing through the x-axis at $x = 2$ and $x = 6$?

   (A) $(x + 4)^2 - (y + 2)^2 = 8$
   (B) $(x - 4)^2 + (y - 2)^2 = 8$
   (C) $(x + 4)^2 + (y - 2)^2 = 8$
   (D) $(x - 4)^2 + (y - 2)^2 = \sqrt{8}$
   (E) $(x + 4)^2 + (y - 2)^2 = \sqrt{8}$

26. In the standard (x, y) coordinate plane a point defined by the ordered pair $(k, 10)$ lies on a circle with a center at the point $(-4, 2)$ and a radius of 10 units in length. Which of the following is a possible value of k?

   (A) -4
   (B) 0
   (C) 2
   (D) 8
   (E) 10

27. In the standard (x, y) coordinate plane a parabola is tangent to the x-axis at the point $(4, 0)$. Which of the following could be the equation of the parabola?

   (A) $y = x^2 + 4x + 16$
   (B) $y = x^2 - 4x + 16$
   (C) $y = -x^2 + 8x + 16$
   (D) $y = -x^2 - 8x - 16$
   (E) $y = x^2 - 8x + 16$

28. What is the eccentricity of an ellipse that is graphed in the standard (x, y) coordinate plane with the equation $\frac{x^2}{4} + \frac{y^2}{9} = 1$? (Note: eccentricity $= \frac{c}{a}$).

   (A) $\frac{3\sqrt{5}}{5}$
   (B) $\frac{\sqrt{5}}{3}$
   (C) $\frac{\sqrt{3}}{5}$
   (D) $\frac{4}{9}$
   (E) $\frac{9}{4}$

29. Which of the following is a possible vertex, in the standard (x, y) coordinate plane, of an ellipse defined by the equation $\frac{x^2}{16} + \frac{y^2}{9} = 1$?

   (A) $(-16, 9)$
   (B) $(9, -16)$
   (C) $(-4, 0)$
   (D) $(0, 9)$
   (E) $(9, 0)$

C2 education
be smarter.

30. What is the equation of the circle in the standard (x, y) coordinate plane centered at $(4, -3)$ with a diameter 10 units long?

   (A) $(x + 4)^2 - (y + 3)^2 = 10$
   (B) $(x - 4)^2 + (y - 3)^2 = 10$
   (C) $(x + 4)^2 + (y - 3)^2 = 25$
   (D) $(x - 4)^2 + (y + 3)^2 = 25$
   (E) $(x + 4)^2 - (y - 3)^2 = 25$

31. What is the standard form of the equation of a parabola in the standard (x, y) coordinate plane with a focus at $(2, 0)$ and a vertex at the origin?

   (A) $y^2 = 2x$
   (B) $y^2 = 8x$
   (C) $x^2 = 8y^2$
   (D) $y = x^2 + 8x$
   (E) $y = 2x^2$

32. What is the vertex of the parabola that is graphed in the standard (x, y) coordinate plane with the following equation: $(x - 1)^2 + 3(y + 2) = 0$?

   (A) $(1, -2)$
   (B) $(-1, 2)$
   (C) $(1, -3)$
   (D) $(1, 3)$
   (E) $(2, 3)$

C2 education
be smarter.

Version 3.0

Unauthorized copying or reuse of any part of this page is illegal.