KEY KEY AOS Math 10 Conic Sections Test B

February 2, 2024

Name and block: _____

## True / False

1. (1 point) __**T**__ The distance between two foci of an ellipse is $2c$.

2. (1 point) __**T**__ The directrix of a parabola is perpendicular to the axis of symmetry.

3. (1 point) __**T**__ The graph of $\dfrac{x^2}{16} + \dfrac{y^2}{25} = 1$ fits entirely inside the graph of $x^2 + y^2 = 30$

4. (1 point) __**F**__ The focus of the parabola $x^2 = 8y$ is the lowest point on the parabola.

5. (1 point) __**F**__ The graphs of $\dfrac{x^2}{2} - \dfrac{y^2}{3} = 1$ and $\dfrac{y^2}{2} - \dfrac{x^2}{3} = 1$ have the same asymptotes.

6. (1 point) __**T**__ The major axis of a (non-circular) ellipse is always longer than the minor axis.

7. (1 point) __**F**__ The foci of an ellipse are on the minor axis.

8. (1 point) __**T**__ A circle is an ellipse with $a = b$.

9. (1 point) __**F**__ The eccentricity of an ellipse can be $e = 1.14$.

10. (1 point) __**F**__ The transverse axis of a hyperbola is always longer than the conjugate axis.
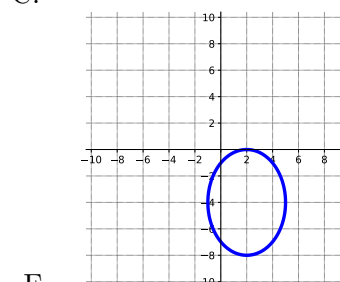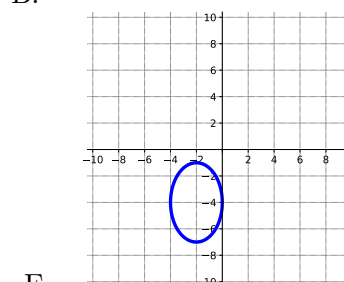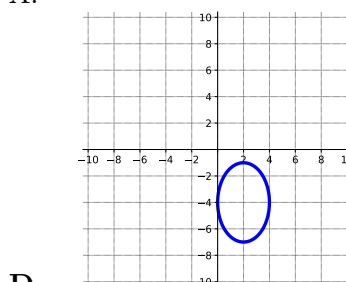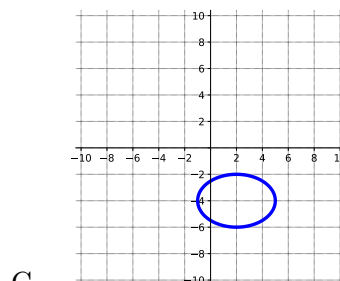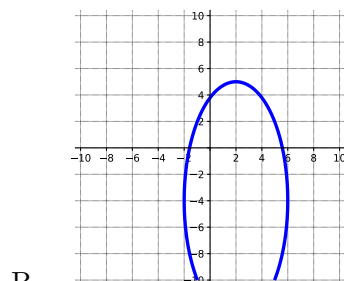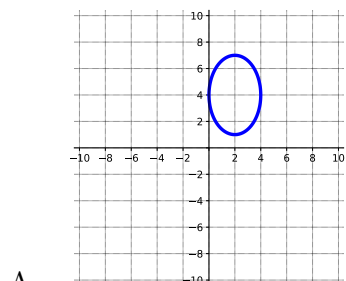
Multiple Choice

Work must be shown for credit

1. (3 points)   **Note the scale is 2 below.** Which is the graph of $\dfrac{(x-3)^2}{9} - \dfrac{(y+4)^2}{4}$?
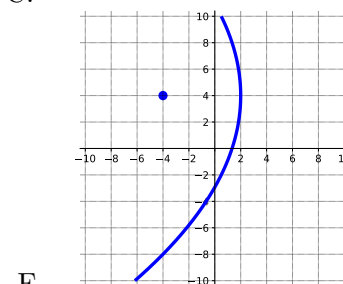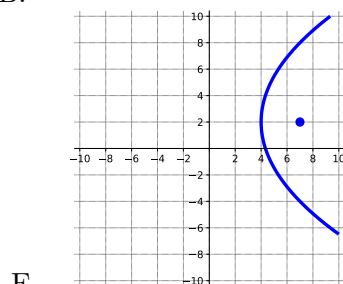
A.

B.

C.

D.

E.

F.
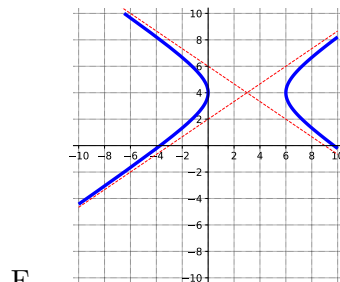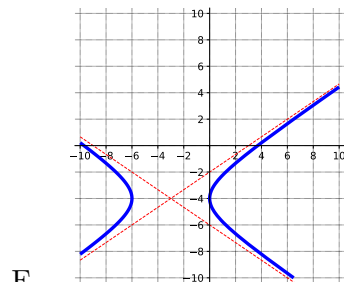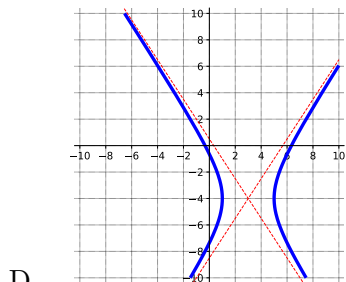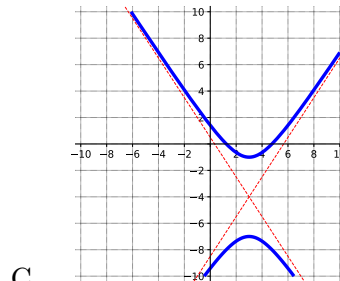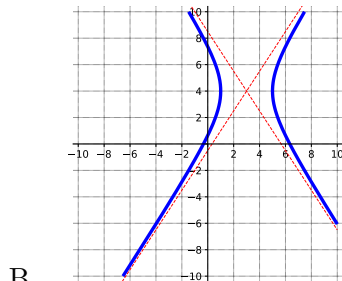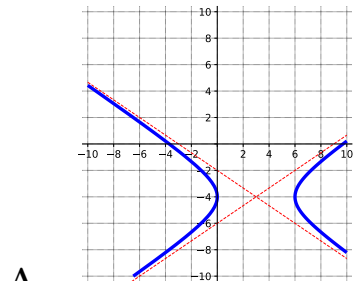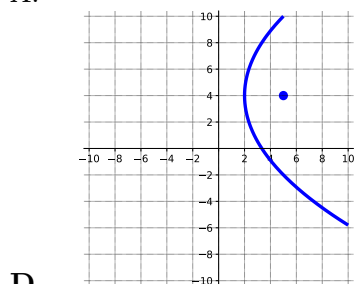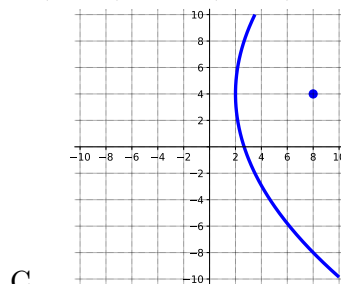
1. _____

2. (3 points)   **Note the scale is 2 below.** Which is the graph of $\dfrac{(x-2)^2}{4} + \dfrac{(y+4)^2}{9}$?

A.

B.

C.

D.

E.

F.

2. _____

3. (3 points) **Note the scale is 2 below.** Which is the graph of $(y-4)^2 = 12(x-2)$?

A.

B.

C.

D.

E.

F.
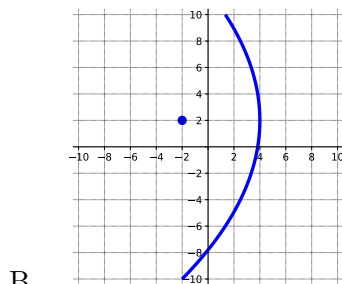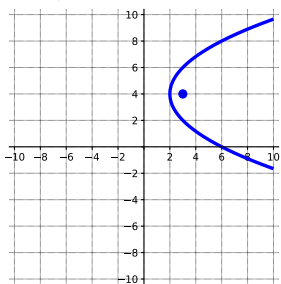
3. _____

4. (3 points) What are the foci of the hyperbola $\dfrac{x^2}{16} - \dfrac{y^2}{12} = 1$?

    A. $(\pm 2\sqrt{7}, 0)$

    B. $(\pm 2, 0)$

    C. $(0, \pm 2\sqrt{7})$

    D. $(0, \pm 2)$

4. _____

5. (3 points) Which is **not** a vertex or co-vertex of the ellipse $\dfrac{x^2}{9} + \dfrac{(y-2)^2}{7} = 1$

    A. $(0, 2 - \sqrt{7})$

    B. $(3, 2)$

    C. $(-3, 2)$

    D. $(3, \sqrt{7})$

5. _____

6. (3 points) What is the equation of a parabola with

- a vertex at $(3, -2)$
- a horizontal axis of symmetry
- the parabola passes through the point $(0, 1)$

    A. $(x - 3)^2 = 3(y + 2)$

    B. $(x + 3)^2 = 12(y + 2)$

    C. $(x - 3)^2 = 4(y + 2)$

    D. $(x - 3)^2 = 12(y - 2)$

    E. $(x - 3)^2 = \frac{4}{9}(y + 2)$

6. _____

7. (3 points) Write the equation of the ellipse that has a major axis 28 units long and is parallel to the y axis, a minor axis 26 units long, and a center at $(11, 8)$.

    A. $\dfrac{(x - 11)^2}{169} + \dfrac{(y - 8)^2}{196} = 1$

    B. $\dfrac{(x - 11)^2}{196} + \dfrac{(y - 8)^2}{169} = 1$

    C. $\dfrac{(x + 11)^2}{196} + \dfrac{(y + 8)^2}{169} = 1$

    D. $\dfrac{(x + 11)^2}{169} + \dfrac{(y + 8)^2}{196} = 1$

7. _____

8. (3 points) Given the equation of a circle in standard form: $(x + 3)^2 + (y - 4)^2 = 49$. Write the equation in general form.

    A. $x^2 + y^2 + 6x - 8y + 74 = 0$

    B. $x^2 + y^2 - 24 = 0$

    C. $x^2 + y^2 + 74 = 0$

    D. $x^2 + y^2 - +3x - 4y - 24 = 0$

    E. $x^2 + y^2 + 6x - 8y - 24 = 0$

8. _____