

KEY KEY – AOS Math 10 Conic Sections Test A

February 2, 2024

Name and block: _____

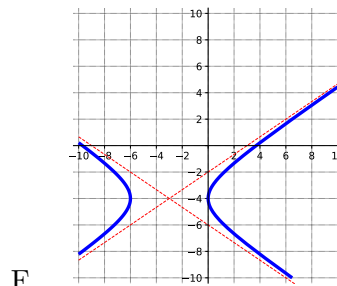
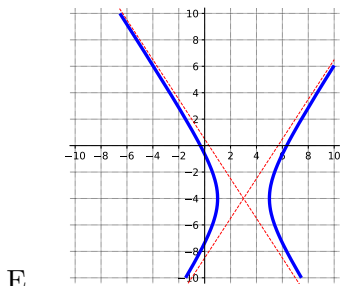
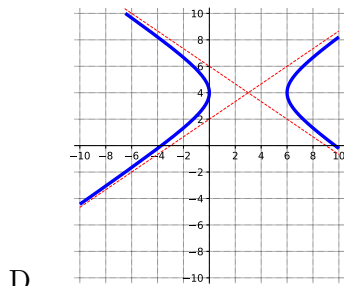
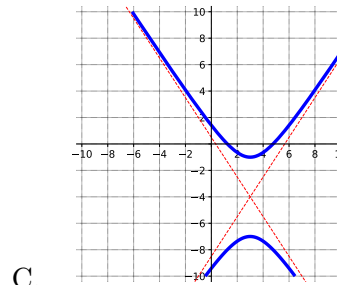
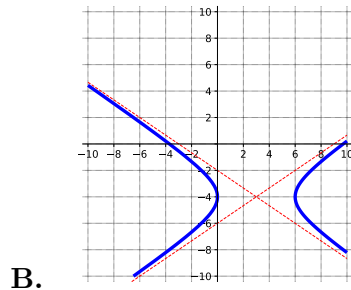
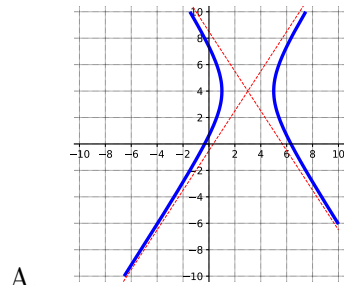
True / False

1. (1 point) **T** The major axis of a (non-circular) ellipse is always longer than the minor axis.
2. (1 point) **F** The transverse axis of a hyperbola is always longer than the conjugate axis.
3. (1 point) **F** The foci of an ellipse are on the minor axis.
4. (1 point) **F** The focus of the parabola $x^2 = 8y$ is the lowest point on the parabola.
5. (1 point) **T** The graph of $\frac{x^2}{16} + \frac{y^2}{25} = 1$ fits entirely inside the graph of $x^2 + y^2 = 30$
6. (1 point) **T** The directrix of a parabola is perpendicular to the axis of symmetry.
7. (1 point) **T** The distance between two foci of an ellipse is $2c$.
8. (1 point) **F** The eccentricity of an ellipse can be $e = 1.14$.
9. (1 point) **T** A circle is an ellipse with $a = b$.
10. (1 point) **F** The graphs of $\frac{x^2}{2} - \frac{y^2}{3} = 1$ and $\frac{y^2}{2} - \frac{x^2}{3} = 1$ have the same asymptotes.

Multiple Choice

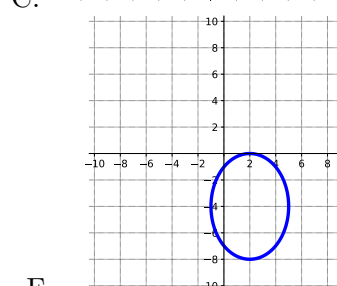
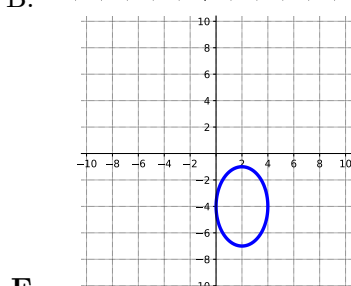
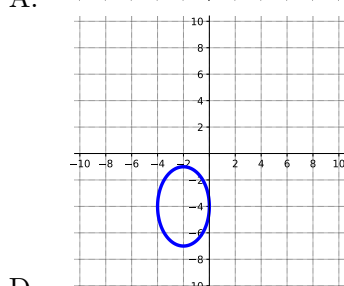
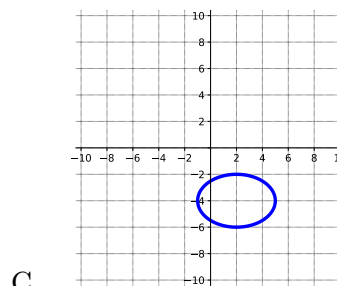
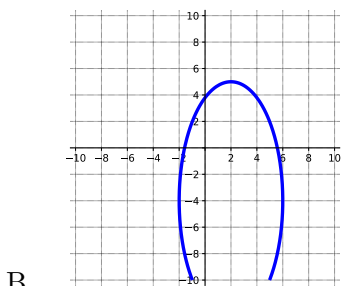
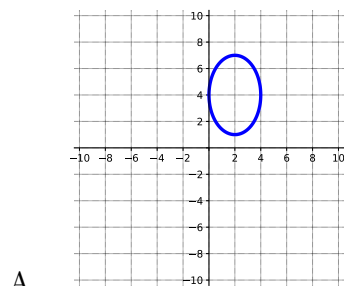
Work must be shown for credit

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



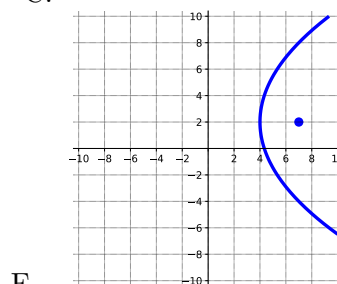
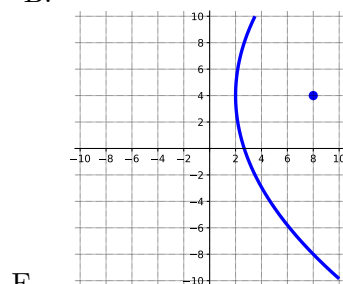
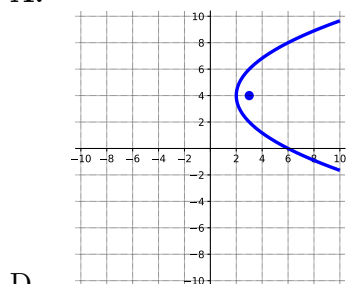
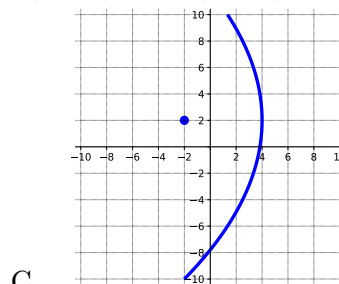
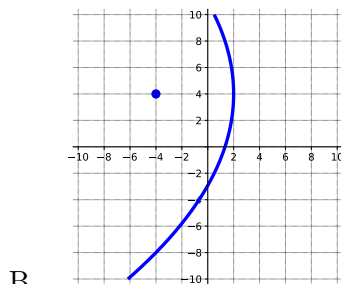
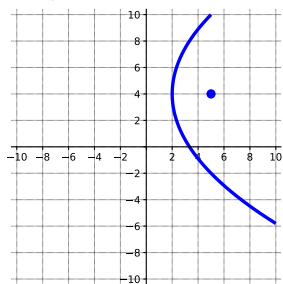
1. _____

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



2. _____

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



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

- A. $(0, \pm 2)$
- B. $(0, \pm 2\sqrt{7})$
- C. $(\pm 2\sqrt{7}, 0)$
- D. $(\pm 2, 0)$

3. _____

4. _____

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

- A. $(0, 2 - \sqrt{7})$
- B. $(3, \sqrt{7})$
- C. $(-3, 2)$
- D. $(3, 2)$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

8. _____