

# AOS Math 10 Conic Sections Test B

February 2, 2024

Name and block: \_\_\_\_\_

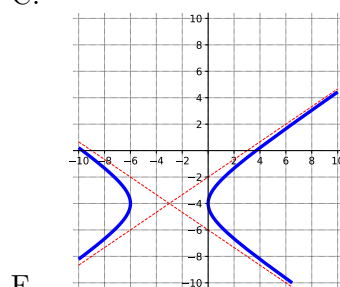
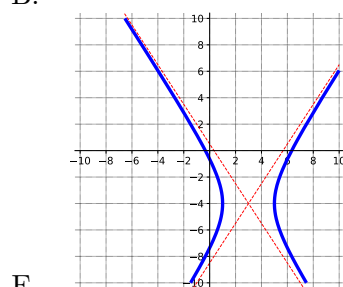
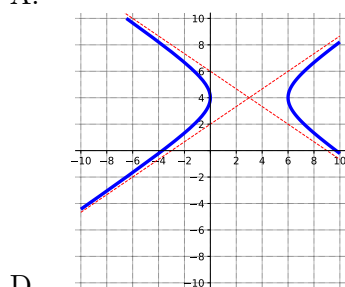
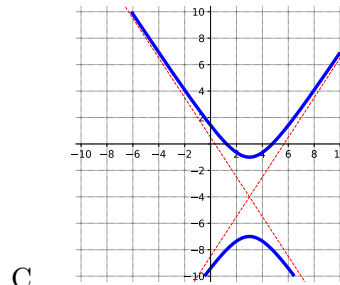
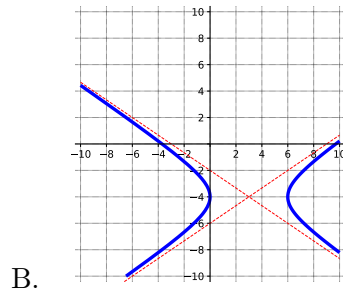
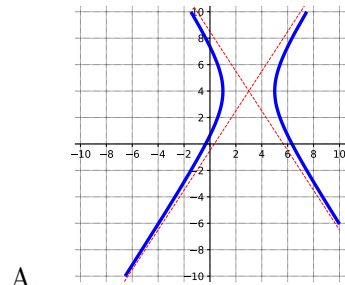
## True / False

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

## Multiple Choice

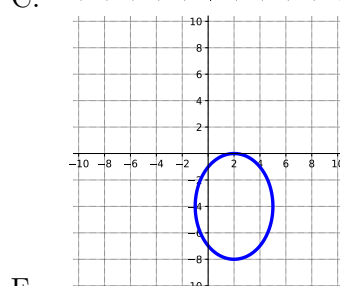
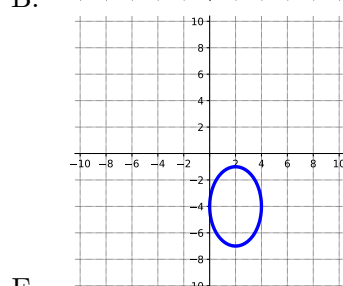
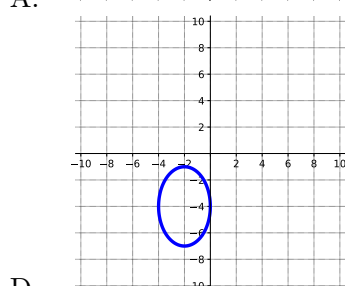
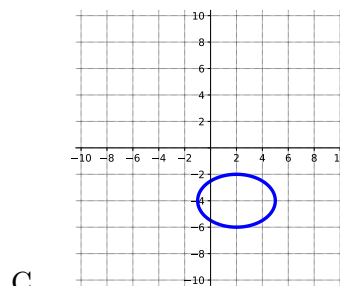
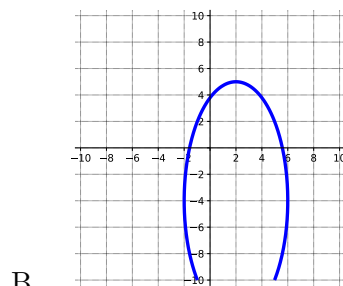
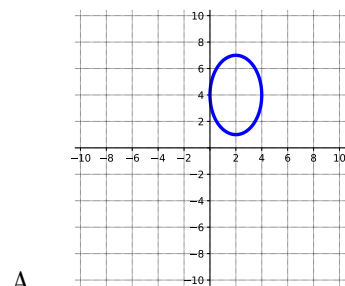
Work must be shown for credit

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



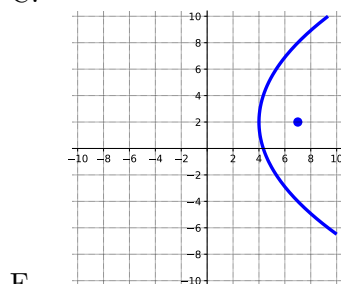
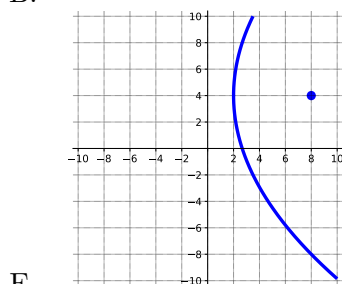
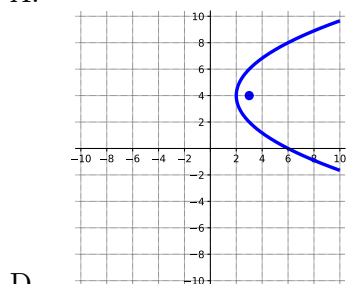
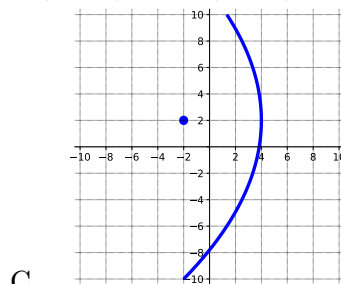
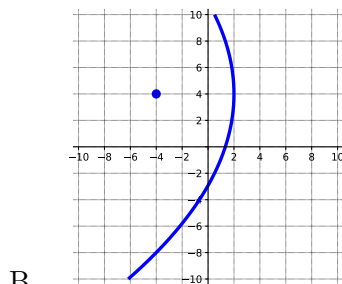
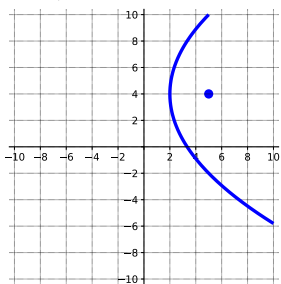
1. \_\_\_\_\_

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

B.  $(\pm 2, 0)$

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

D.  $(0, \pm 2)$

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.  $(3, 2)$

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

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

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. \_\_\_\_\_