"Where does a blackbird go to drink?"

Find the equation for the hyperbola described. The answer to each problem will match a letter that will allow you to figure out the joke.

1. Center at (0,0), focus at (4,0), vertex at (1,0)

A: $\dfrac{(y-8)^2}{9} - \dfrac{(x-2)^2}{16} = 1$

2. Center at (0,0), focus at (0,-5), vertex at (0,3)

B: $\dfrac{(y-3)^2}{4} - \dfrac{(x+1)^2}{5} = 1$

T: $\dfrac{(y-3)^2}{} - \dfrac{(x+3)^2}{8} = 1$

3. Foci at (-6,0) and (6,0), vertex at (2,0)

O: $\dfrac{x^2}{4} - \dfrac{y^2}{32} = 1$

4. Foci at (0,-6), and (0,6), asymptote line: y = -x

C: $\dfrac{y^2}{18} - \dfrac{x^2}{18} = 1$

5. Center at (-1,3), focus at (-1,6), vertex at (-1,5)

W: $\dfrac{(x-1)^2}{4} - \dfrac{(y+1)^2}{9} = 1$

6. Center at (3,4) focus at (-1,4), vertex at (0,4)

O: $x^2 - \dfrac{y^2}{15} = 1$

7. Foci at (2,6) and (6,6), vertex at (5,6)

R: $(x-4)^2 - \dfrac{(y-6)^2}{3} = 1$

8. Focus at (-3,0), vertices at (-3,4) and (-3,2)

A: $\dfrac{(x-3)^2}{9} - \dfrac{(y-4)^2}{7} = 1$

9. Vertices (2,5) and (2,11), focus at (2,13)

R: $\dfrac{y^2}{9} - \dfrac{x^2}{16} = 1$

10. Vertices (-1,-1) and (3,-1), asymptote line: $y + 1 = \dfrac{3}{2}(x-1)$

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   8   3   6   4   7   1   10   5   9   2

Hyperbolas — writing equations

Joke #4

9

"What's the name of the snake that joined the Canadian police force?"

Find the center and foci of each hyperbola. The answer to each problem will match a letter that will allow you to figure out the joke.

1. $\dfrac{y^2}{9} - \dfrac{x^2}{36} = 1$

2. $y^2 - 4x^2 = 16$

3. $\dfrac{(x + 2)^2}{11} - \dfrac{(y - 3)^2}{25} = 1$

4. $(x - 1)^2 - 4(y + 4)^2 = 64$

5. $4y^2 - x^2 - 16y + 2x + 11 = 0$

6. $y^2 - 3x^2 + 6x + 6y = 18$

7. $4x^2 - 25y^2 - 8x - 96 = 0$

8. $144y^2 - 25x^2 - 576y - 150x = 3249$

9. $25x^2 - 4y^2 + 100x + 24y - 36 = 0$

10. $3y^2 - 4x^2 + 12y + 24x = 36$

P: $C(3, -2)$ and $F(3, -2 \pm \sqrt{7})$

n: $C(1, 0)$ and $F(1 \pm \sqrt{29}, 0)$

Y: $C(1, -4)$ and $F(1 \pm 4\sqrt{5}, -4)$

H: $C(0, 0)$ and $F(0, \pm 2\sqrt{5})$

O: $C(-3, 2)$, $F_1(-3, 15)$, $F_2(-3, -11)$

U: $C(0, 0)$ and $F(0, \pm 3\sqrt{5})$

T: $C(-2, 3)$ and $F(-2 \pm \sqrt{29}, 3)$

E: $C(-2, 3)$, $F_1(4, 3)$, $F_2(-8, 3)$

M: $C(1, -3)$ and $F(1, -3 \pm 4\sqrt{2})$

I: $C(1, 2)$ and $F(1, 2 \pm \sqrt{5})$

$\overline{}_{6}\ \overline{}_{8}\ \overline{}_{1}\ \overline{}_{7}\ \overline{}_{9}\ \overline{}_{5}\ \overline{}_{3}\ \overline{}_{10}\ \overline{}_{4}\ \overline{}_{9}\ \overline{}_{2}\ \overline{}_{8}\ \overline{}_{7}$

Hyperbolas — finding the center and foci

Joke #5B