

Short Review of Sections 4.1/4.3, Topics of Conics, and Solving Systems

Use the information provided to write the standard form equation of each ellipse.

1) Vertices: $(25, 0)$, $(-5, 0)$
Co-vertices: $(10, 11)$, $(10, -11)$

2) Vertices: $(-8, 13)$, $(-8, -5)$
Co-vertices: $(-2, 4)$, $(-14, 4)$

3) Vertices: $(12, -9)$, $(-2, -9)$
Co-vertices: $(5, -3)$, $(5, -15)$

Use the information provided to write the standard form equation of each hyperbola.

4) Vertices: $(5, -6)$, $(1, -6)$
Distance from Center to Focus = $\sqrt{53}$

5) Vertices: $(-8, 20)$, $(-8, 0)$
Distance from Center to Focus = $2\sqrt{41}$

6) Vertices: $(18, 3)$, $(2, 3)$
Distance from Center to Focus = $\sqrt{73}$

Use the information provided to write the transformational form (standard form) equation of each parabola.

7) Vertex: $(0, -7)$, Focus: $\left(\frac{1}{8}, -7\right)$

8) Vertex: $(2, -8)$, Focus: $\left(2, -\frac{33}{4}\right)$

9) Vertex: $(-4, -10)$, Focus: $\left(-\frac{7}{2}, -10\right)$

10) Vertex: $(5, 0)$, Focus: $\left(5, -\frac{1}{12}\right)$

11) Vertex: $(3, -10)$, Focus: $\left(\frac{7}{2}, -10\right)$

12) Vertex: $(-4, -10)$, Focus: $\left(-\frac{271}{68}, -10\right)$

Solve each system of equations.

13) $x^2 + 3y^2 - 128x + 196 = 0$
 $2x + y = -2$

14) $3x^2 + 2y^2 - 27x - 32 = 0$
 $3x + y + 4 = 0$

15) $x^2 + y^2 + 21x - y + 26 = 0$
 $x + y - 3 = 0$

16) $5y^2 + 8x + 70y + 184 = 0$
 $13x^2 - 5y^2 - 125x - 70y - 2 = 0$

17) $x^2 + y^2 + 6x - 14y + 29 = 0$
 $-x^2 + 5y^2 - 6x - 52y + 79 = 0$

18) $2x^2 + 2y^2 - 32x + 3y + 93 = 0$
 $2x^2 + 17y^2 - 32x + 33y - 132 = 0$

19) $r + 5s + t = 0$
 $-5r - 2s + 3t = 6$
 $r - 5s - 4t = 5$

20) $-2a - b + 5c = -28$
 $-a + 4b - c = 25$
 $3a + 6b + c = 9$

21) $4a + 2b + c = -16$
 $2a - 5b - 2c = 3$
 $4a + 3b - c = -13$

- 22) Molly and Jack are selling flower bulbs for a school fundraiser. Customers can buy bags of windflower bulbs and bags of daffodil bulbs. Molly sold 12 bags of windflower bulbs and 6 bags of daffodil bulbs for a total of \$294. Jack sold 5 bags of windflower bulbs and 12 bags of daffodil bulbs for a total of \$303. What is the cost each of one bag of windflower bulbs and one bag of daffodil bulbs?
- 23) Kim and Rob are selling pies for a school fundraiser. Customers can buy blueberry pies and pumpkin pies. Kim sold 5 blueberry pies and 13 pumpkin pies for a total of \$296. Rob sold 13 blueberry pies and 1 pumpkin pie for a total of \$212. What is the cost each of one blueberry pie and one pumpkin pie?
- 24) Jacob's school is selling tickets to the annual talent show. On the first day of ticket sales the school sold 1 adult ticket and 12 child tickets for a total of \$81. The school took in \$111 on the second day by selling 5 adult tickets and 11 child tickets. Find the price of an adult ticket and the price of a child ticket.

Find a coterminal angle in radians between 0 and 2π for the given angle.

25) $\frac{29\pi}{12}$

26) $\frac{31\pi}{9}$

27) $\frac{83\pi}{36}$

28) $-\frac{11\pi}{9}$

29) $-\frac{49\pi}{18}$

30) $-\frac{26\pi}{45}$

- 31) Skateboard Ramp: You want to build a skateboard ramp with a length of 14 feet and an angle of elevation of 26° . You need to find the height and length of the base of the ramp.

- 32) A wire reaches from the top of a 168 m television transmitter tower to the ground. The wire makes a 52° angle of elevation with the ground. Find the length of the wire to one decimal place.

Answers to Short Review of Sections 4.1/4.3, Topics of Conics, and Solving Systems

- 1) $\frac{(x-10)^2}{225} + \frac{y^2}{121} = 1$ 2) $\frac{(x+8)^2}{36} + \frac{(y-4)^2}{81} = 1$ 3) $\frac{(x-5)^2}{49} + \frac{(y+9)^2}{36} = 1$
- 4) $\frac{(x-3)^2}{4} - \frac{(y+6)^2}{49} = 1$ 5) $\frac{(y-10)^2}{100} - \frac{(x+8)^2}{64} = 1$ 6) $\frac{(x-10)^2}{64} - \frac{(y-3)^2}{9} = 1$
- 7) $\frac{1}{2}x = (y+7)^2$ 8) $-(y+8) = (x-2)^2$ 9) $2(x+4) = (y+10)^2$ 10) $-\frac{1}{3}y = (x-5)^2$
- 11) $2(x-3) = (y+10)^2$ 12) $\frac{1}{17}(x+4) = (y+10)^2$ 13) $(4, -10)$
- 14) $(0, -4), (-1, -1)$ 15) $(-4, 7)$ 16) $(2, -4), (2, -10), (7, -6), (7, -8)$
- 17) $(2, 9), (-8, 9), (-1, 2), (-5, 2)$ 18) $(8, -5), (10, 3), (6, 3)$ 19) $(-5, 2, -5)$
- 20) $(-3, 4, -6)$ 21) $(-3, -1, -2)$
- 22) bag of windflower bulbs: \$15, bag of daffodil bulbs: \$19
- 23) blueberry pie: \$15, pumpkin pie: \$17 24) adult ticket: \$9, child ticket: \$6
- 25) $\frac{5\pi}{12}$ 26) $\frac{13\pi}{9}$ 27) $\frac{11\pi}{36}$ 28) $\frac{7\pi}{9}$
- 29) $\frac{23\pi}{18}$ 30) $\frac{64\pi}{45}$ 31) feet 32) meters