

Answers For Ellipses in Standard Form

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Algebra 2

#	Problem	Direction	Center	a	b	c same direction as "a"	Vertices	Foci	Eccentricity $e = c/a$
1	$x^2/16 + y^2/9 = 1$	Horizontal	(0,0)	4 (left & right)	3 (up & down)	$\sqrt{7} = 2.6$	(4,0) (-4,0) (0,3) (0,-3)	(2.6,0) (-2.6,0)	$\frac{\sqrt{7}}{4}$
2	$x^2/25 + (y-3)^2/4 = 1$	Horizontal	(0,3)	5 (left & right)	2 (up & down)	$\sqrt{21} = 4.6$	(5,3) (-5,3) (0,5) (0,1)	(4.6,3) (-4.6,3)	$\frac{\sqrt{21}}{5}$
3	$(x+1)^2/49 + (y+2)^2/25 = 1$	Horizontal	(-1,-2)	7 (left & right)	5 (up & down)	$2\sqrt{6} = 4.9$	(-8,-2) (6,-2) (-1,3) (-1,-7)	(-5.9,-2) (3.9,-2)	$\frac{2\sqrt{6}}{7}$
4	$(x-4)^2/12 + (y+3)^2/8 = 1$	Horizontal	(4,-3)	$2\sqrt{3} = 3.5$ (left & right)	$2\sqrt{2} = 2.8$ (up & down)	2	(7.5,-3) (0.5,-3) (4, 0.2) (4, -5.8)	(6,-3) (2,-3)	$\frac{\sqrt{3}}{3}$
5	$x^2/4 + y^2/25 = 1$	Vertical	(0,0)	5 (up & down)	2 (left & right)	$\sqrt{21} = 4.6$	(2,0) (-2,0) (0,5) (0,-5)	(0,4.6) (0,-4.6)	$\frac{\sqrt{21}}{5}$
6	$(x-3)^2/4 + y^2/16 = 1$	Vertical	(3,0)	4 (up & down)	2 (left & right)	$2\sqrt{3} = 3.5$	(5,0) (1,0) (3,4) (3,-4)	(3, 3.5) (3, -3.5)	$\frac{2\sqrt{3}}{4}$
7	$(x+4)^2/25 + (y+5)^2/36 = 1$	Vertical	(-4,-5)	6 (up & down)	5 (left & right)	$\sqrt{11} = 3.3$	(-9,-5) (1,-5) (-4,1) (-4,-11)	(-4, -8.3) (-4,-1.7)	$\frac{\sqrt{11}}{6}$
8	$(x-2)^2/4 + (y+3)^2/9 = 1$	Vertical	(2,-3)	3 (up & down)	2 (left & right)	$\sqrt{5} = 2.2$	(4,-3) (0,-3) (2,0) (2,-6)	(2, -5.2) (2,-0.8)	$\frac{\sqrt{5}}{3}$

Answers For Ellipses in Standard Form

#	General Form	Standard Form	Direction	Center	a Same direction as ellipse	b opposite direction from "a"	c Same direction as "a"	Vertices	Foci	Eccentric ity $e = c/a$
1	$9x^2+16y^2-144=0$	$\frac{x^2}{16} + \frac{y^2}{9} = 1$	Horiz	(0, 0)	4	3	$\sqrt{7} = 2.6$	(4,0) (-4,0) (0,3) (0,-3)	(2.6,0) (-2.6, 0)	$\frac{\sqrt{7}}{4}$
2	$9x^2+18x+4y^2+16y-11=0$	$\frac{(x+1)^2}{4} + \frac{(y+2)^2}{9} = 1$	Vert	(-1, -2)	3	2	$\sqrt{5} = 2.2$	(-1, 1) (-1, -5) (-3, -2) (1, -2)	(-1, 0.2) (-1, -4.2)	$\frac{\sqrt{5}}{3}$
3	$16x^2+25y^2-400=0$	$\frac{x^2}{25} + \frac{y^2}{16} = 1$	Horiz	(0, 0)	5	4	3	(5, 0) (-5, 0) (0, 4) (0, -4)	(3, 0) (-3, 0)	$\frac{3}{5}$
4	$4x^2+y^2-24x+4y+36=0$	$\frac{(x-3)^2}{1} + \frac{(y+2)^2}{4} = 1$	Vert	(3, -2)	2	1	$\sqrt{3} = 1.7$	(3, 0) (3, -4) (2, -2) (4, -2)	(3, -3.7) (3, -0.3)	$\frac{\sqrt{3}}{2}$
5	$16x^2+4y^2+48x-32y+36=0$	$\frac{\left(x+\frac{3}{2}\right)^2}{4} + \frac{(y-4)^2}{16} = 1$	Vert	(-1.5, 4)	4	2	$2\sqrt{3} = 3.5$	(-1.5, 8) (-1.5, 0) (-3.5, 4) (0.5, 4)	(-1.5, 7.5) (-1.5, 0.5)	$\frac{\sqrt{3}}{2}$
6	$4x^2+25y^2+20x-150y+150=0$	$\frac{\left(x+\frac{5}{2}\right)^2}{25} + \frac{(y-3)^2}{4} = 1$	Horiz	(-2.5, 3)	5	2	$\sqrt{21} = 4.6$	(-7.5, 3) (2.5, 3) (-2.5, 5) (-2.5, 1)	(-7.1, 3) (2.1, 3)	$\frac{\sqrt{21}}{5}$
7	$x^2+4y^2-2x+8y+1=0$	$\frac{(x-1)^2}{4} + \frac{(y+1)^2}{1} = 1$	Horiz	(1, -1)	2	1	$\sqrt{3} = 1.7$	(-1, -1) (3, -1) (1, 0) (1, -2)	(2.7, -1) (-0.7, -1)	$\frac{\sqrt{3}}{2}$
8	$x^2+9y^2-10x+16=0$	$\frac{(x-5)^2}{9} + \frac{y^2}{1} = 1$	Horiz	(5, 0)	3	1	$2\sqrt{2} = 2.8$	(8, 0) (2, 0) (5, 1) (5, -1)	(7.8, 0) (2.2, 0)	$\frac{2\sqrt{2}}{3}$
9	$9x^2+4y^2+36x+24y+36=0$	$\frac{(x+2)^2}{4} + \frac{(y+3)^2}{9} = 1$	Vert	(-2, -3)	3	2	$\sqrt{5} = 2.2$	(-2, 0) (-2, -6) (0, -3) (-4, -3)	(-2, -5.2) (-2, -0.8)	$\frac{\sqrt{5}}{3}$

Horiz = Horizontal

Vert = Vertical