Circles WS

① center $(9,0)$ $r=7$

② center $(0,0)$ $r=1$

③ center $(0,0)$ $r=\sqrt{1/2}=0.707$

④ $\frac{3x^2}{3}+\frac{3y^2}{3}-\frac{27}{3}=\frac{0}{3}$

$x^2+y^2-9=0$

$x^2+y^2=9$

center $(0,0)$ $r=3$

⑤ center $(-3,8)$ $r=4$

⑥ center $(-9,-1)$ $r=6$

⑦ center $(1,0)$ $r=\sqrt{10}=3.162$

⑧ center $(0,-12)$ $r=\sqrt{24}=4.899$

⑨ $x^2-2x+y^2+6y=-9$

$x^2-2x+\underline{1}+y^2+6y+\underline{9}=-9+\underline{1}+\underline{9}$

$(x-1)^2+(y+3)^2=1$

center $(1,-3)$ $r=1$

⑩ $x^2-10x+y^2-6y=-25$

$x^2-10x+\underline{25}+y^2-6y+\underline{9}=-25+\underline{25}+\underline{9}$

$(x-5)^2+(y-3)^2=9$

center $(5,3)$ $r=3$

⑪ $\frac{9x^2}{9}+\frac{9y^2}{9}+\frac{54x}{9}-\frac{36y}{9}+\frac{17}{9}=\frac{0}{9}$

$x^2+y^2+6x-4y+17/9=0$

$x^2+6x+\underline{9}+y^2-4y+\underline{4}=-17/9+\underline{9}+\underline{4}$

$(x+3)^2+(y-2)^2=100/9$

center $(-3,2)$ $r=\sqrt{100/9}=10/3=3.333$

(12) $\frac{6x^2}{6} + \frac{6y^2}{6} - \frac{12x}{6} + \frac{36y}{6} - \frac{36}{6} = \frac{0}{6}$

$x^2 + y^2 - 2x + 6y - 6 = 0$

$x^2 - 2x + \underline{1} + y^2 + 6y + \underline{9} = 6 + \underline{1} + \underline{9}$

$(x-1)^2 + (y+3)^2 = 16$

center $(1, -3)$ $r = 4$.

(13) $x^2 + y^2 = 36$

(14) $x^2 + y^2 = 1$

(15) $x^2 + y^2 = 81/16$

(16) $x^2 + y^2 = 100/49$

(17) $(x-2)^2 + (y+7)^2 = \cancel{100}\ 25$ $d = 10$, $r = 5$

(18) $(x-3)^2 + (y+2)^2 = 49$ $d = 14$, $r = 7$

(19) $(x+3)^2 + (y+4)^2 = 1/256$ $d = 1/8$ $r = 1/16$

(20) $(x+8)^2 + (y-12)^2 = 28$

(21) $d = \sqrt{(4+3)^2 + (5-1)^2} = \sqrt{7^2 + 4^2} = \sqrt{65} = 8.062$

$r = 4.031$

center $= \left(\frac{-3+4}{2}, \frac{1+5}{2}\right) = \left(\frac{1}{2}, 3\right)$

$(x - 1/2)^2 + (y-3)^2 = 16.25$

(22) $d = \sqrt{(-2-0)^2 + (-3-4)^2} = \sqrt{4+49} = \sqrt{53} = 7.28$

$r = 3.64$

center $= \left(\frac{0+-2}{2}, \frac{4-3}{2}\right) = \left(-1, \frac{1}{2}\right)$

$(x+1)^2 + (y - 1/2)^2 = 13.25$

(23) $r = \sqrt{(4-1)^2 + (-6-2)^2} = \sqrt{9+64} = \sqrt{73} = 8.544$

center $(1, 2)$

$(x-1)^2 + (y-2)^2 = 73$

(24) $r = \sqrt{(-1-0)^2 + (-3+3)^2} = \sqrt{1} = 1$

center $(0, -3)$

$x^2 + (y+3)^2 = 1$