

2.1 Notes continued

$$\textcircled{70} \quad x^2 + y^2 + 6x - 8y - 6 = 0$$

* completing the square *

$$\textcircled{1} \quad x^2 + \textcircled{6}x + \frac{9}{\quad} + y^2 - \textcircled{8}y + 16 = 6$$

take half

and square =

$$\frac{6}{2} = 3^2 = 9$$

do the same

$$\frac{-8}{2} = (-4)^2 = 16$$

$$x^2 + 6x + 9 + y^2 - 8y + 16 = 6$$

$$\boxed{(x+3)^2 + (y-4)^2 = 31}$$

* NOW in standard form *

center: $(-3, 4)$ radius: $\sqrt{31} = 5.6$

$$\textcircled{72} \quad x^2 + y^2 + 6x + 4y + 12 = 0$$

$$x^2 + 6x + 9 + y^2 + 4y + 4 = -12 + 9 + 4$$

$$\frac{6}{2} = 3^2 \quad \frac{4}{2} = 2^2 =$$

$$\boxed{(x+3)^2 + (y+2)^2 = 1}$$

center: $(-3, -2)$ radius $\sqrt{1} = 1$

Homework

2.1

7-19 odd

25-37 ↓

47-79 ↓

2.1 Completing the Square

70 | $x^2 + y^2 + 6x - 8y + 6 = 0$

① $x^2 + 6x + 9 + y^2 - 8y + 16 = 6 + 9 + 16$

② magic # $\rightarrow \frac{6}{2} = 3 \rightarrow$ $\frac{-8}{2} = -4, (-4)^2$

③ $(x+3)^2 + (y-4)^2 = 31$

Center = $(-3, 4)$

$r = \sqrt{31} = 5.6$

72 | $x^2 + y^2 + 6x + 4y + 12 = 0$

① $x^2 + 6x + 9 + y^2 + 4y + 4 = -12 + 9 + 4$

② $(x+3)^2 + (y+2)^2 = 1$

Center = $(-3, -2)$

$r = \sqrt{1} = 1$

* Degenerate Circle = Radius is Negative *

* Homework *

719, 25-37, 47-79