> # HW 13 Julian Jimenez RUID: 187009906

> **read** "/Users/jjj104/Documents/M13.txt";
  Help13( );

$RT2(x,y,d,K), Orb2(F,x,y,pt0,K1,K2), FP2(F,x,y), SFP2(F,x,y), PlotOrb2(L), FP2drz(F,x,y),$ **(1)**
  $SFP2drz(F,x,y)$

> #2
  $f := [(x^2 + 8*x + 7)/x^2, (9*x^2 + 8*x + 7)/(9*x^2 + 9)];$
  $evalf(FP2(f, x, y));$
  $SFP2(f, x, y);$
  $Orb2(f, x, y, [8.5, 0.5], 100, 105);$

$$f := \left[\frac{\left(x^2 + 8 \cdot x + 7\right)}{x^2}, \frac{\left(9\,x^2 + 8 \cdot x + 7\right)}{9\,x^2 + 9} \right]$$

$$f := \left[\frac{x^2 + 8\,x + 7}{x^2}, \frac{9\,x^2 + 8\,x + 7}{9\,x^2 + 9} \right]$$

$$[[3.685779526, 1.209395432]]$$

$$[[3.685779526, 1.209395432]]$$

$[[3.685781428, 1.209395530], [3.685777874, 1.209395347], [3.685780959, 1.209395505],$
  $[3.685778281, 1.209395368], [3.685780606, 1.209395488]]$

$$f := \left[\frac{x^2 + 8\,x + 7}{x^2}, \frac{9\,x^2 + 8\,x + 7}{9\,x^2 + 9} \right] \qquad \textbf{(2)}$$

> #3
  $i := 0;$
  $fp := \{ \};$
  while $i < 20$ **do**
     $d := RT2(x, y, 1, 100);$
     $i := i + 1;$
     $fp := \{FP2drz(d, x, y), op(fp)\};$
     $sfp := SFP2drz(d, x, y);$
     $print(sfp);$
     $orb := evalf(Orb2(d, x, y, [8, 5], 1000, 1005));$
     $print(orb);$
  od;

$$i := 0$$
$$fp := \varnothing$$

$$d := \left[\frac{6 + 98\,y + 59\,x}{44 + 100\,y + 38\,x}, \frac{69 + 27\,y + 96\,x}{17 + 90\,y + 34\,x} \right]$$

$$i := 1$$

$$fp := \{[[-0.7537614487, 0.1551330027], [0.8904115891, 1.202328786], [1.151025546,$$
$$-1.583347642], [1113.164942, -423.2252253]]\}$$

$$sfp := [[0.8904115891, 1.202328786]]$$

$$[[0.8904115891, 1.202328786]] \tag{3}$$

> #4
> #5
```
e := 0;
while e < 10 do
  k := RT3(x, y, z, 1, 100);
  fp3;
  {evalf(FP3(k, x, y, z)), op(fp3)};
  sfp3 := SFP3(k, x, y, z);
  print(sfp3);
  orb3 := evalf(Orb3(k, x, y, z, [2, 3], 100, 110), 10);
  print(orb3);
  e := e + 1;
od;
```

$$e := 0$$

$$k := RT3(x, y, z, 1, 100)$$

$$fp3$$

$$\{fp3, FP3(RT3(x, y, z, 1, 100), x, y, z)\}$$

$$sfp3 := SFP3(RT3(x, y, z, 1, 100), x, y, z)$$

$$SFP3(RT3(x, y, z, 1, 100), x, y, z)$$

$$orb3 := Orb3(RT3(x, y, z, 1, 100), x, y, z, [2, 3], 100, 110)$$

$$Orb3(RT3(x, y, z, 1, 100), x, y, z, [2, 3], 100, 110)$$

$$e := 1$$

$$k := RT3(x, y, z, 1, 100)$$

$$fp3$$

$$\{fp3, FP3(RT3(x, y, z, 1, 100), x, y, z)\}$$

$$sfp3 := SFP3(RT3(x, y, z, 1, 100), x, y, z)$$

$$SFP3(RT3(x, y, z, 1, 100), x, y, z)$$

$$orb3 := Orb3(RT3(x, y, z, 1, 100), x, y, z, [2, 3], 100, 110)$$

$$Orb3(RT3(x, y, z, 1, 100), x, y, z, [2, 3], 100, 110)$$

$$e := 2$$

$$k := RT3(x, y, z, 1, 100)$$

$$fp3$$

$$\{\mathit{fp3}, FP3(RT3(x, y, z, 1, 100), x, y, z)\}$$

$$\mathit{sfp3} := SFP3(RT3(x, y, z, 1, 100), x, y, z)$$

$$SFP3(RT3(x, y, z, 1, 100), x, y, z)$$

$$\mathit{orb3} := Orb3(RT3(x, y, z, 1, 100), x, y, z, [2, 3], 100, 110)$$

$$Orb3(RT3(x, y, z, 1, 100), x, y, z, [2, 3], 100, 110)$$

$$e := 3$$

$$k := RT3(x, y, z, 1, 100)$$

$$\mathit{fp3}$$

$$\{\mathit{fp3}, FP3(RT3(x, y, z, 1, 100), x, y, z)\}$$

$$\mathit{sfp3} := SFP3(RT3(x, y, z, 1, 100), x, y, z)$$

$$SFP3(RT3(x, y, z, 1, 100), x, y, z)$$

$$\mathit{orb3} := Orb3(RT3(x, y, z, 1, 100), x, y, z, [2, 3], 100, 110)$$

$$Orb3(RT3(x, y, z, 1, 100), x, y, z, [2, 3], 100, 110)$$

$$e := 4$$

$$k := RT3(x, y, z, 1, 100)$$

$$\mathit{fp3}$$

$$\{\mathit{fp3}, FP3(RT3(x, y, z, 1, 100), x, y, z)\}$$

$$\mathit{sfp3} := SFP3(RT3(x, y, z, 1, 100), x, y, z)$$

$$SFP3(RT3(x, y, z, 1, 100), x, y, z)$$

$$\mathit{orb3} := Orb3(RT3(x, y, z, 1, 100), x, y, z, [2, 3], 100, 110)$$

$$Orb3(RT3(x, y, z, 1, 100), x, y, z, [2, 3], 100, 110)$$

$$e := 5$$

$$k := RT3(x, y, z, 1, 100)$$

$$\mathit{fp3}$$

$$\{\mathit{fp3}, FP3(RT3(x, y, z, 1, 100), x, y, z)\}$$

$$\mathit{sfp3} := SFP3(RT3(x, y, z, 1, 100), x, y, z)$$

$$SFP3(RT3(x, y, z, 1, 100), x, y, z)$$

$$\mathit{orb3} := Orb3(RT3(x, y, z, 1, 100), x, y, z, [2, 3], 100, 110)$$

$$Orb3(RT3(x, y, z, 1, 100), x, y, z, [2, 3], 100, 110)$$

$$e := 6$$

$$k := RT3(x, y, z, 1, 100)$$

$$\mathit{fp3}$$

$$\{\mathit{fp3}, FP3(RT3(x, y, z, 1, 100), x, y, z)\}$$

$$\mathit{sfp3} := SFP3(RT3(x, y, z, 1, 100), x, y, z)$$

$$SFP3(RT3(x, y, z, 1, 100), x, y, z)$$

$$\mathit{orb3} := Orb3(RT3(x, y, z, 1, 100), x, y, z, [2, 3], 100, 110)$$

$$Orb3(RT3(x, y, z, 1, 100), x, y, z, [2, 3], 100, 110)$$

$$e := 7$$

$$k := RT3(x, y, z, 1, 100)$$

$$fp3$$

$$\{fp3, FP3(RT3(x, y, z, 1, 100), x, y, z)\}$$

$$sfp3 := SFP3(RT3(x, y, z, 1, 100), x, y, z)$$

$$SFP3(RT3(x, y, z, 1, 100), x, y, z)$$

$$orb3 := Orb3(RT3(x, y, z, 1, 100), x, y, z, [2, 3], 100, 110)$$

$$Orb3(RT3(x, y, z, 1, 100), x, y, z, [2, 3], 100, 110)$$

$$e := 8$$

$$k := RT3(x, y, z, 1, 100)$$

$$fp3$$

$$\{fp3, FP3(RT3(x, y, z, 1, 100), x, y, z)\}$$

$$sfp3 := SFP3(RT3(x, y, z, 1, 100), x, y, z)$$

$$SFP3(RT3(x, y, z, 1, 100), x, y, z)$$

$$orb3 := Orb3(RT3(x, y, z, 1, 100), x, y, z, [2, 3], 100, 110)$$

$$Orb3(RT3(x, y, z, 1, 100), x, y, z, [2, 3], 100, 110)$$

$$e := 9$$

$$k := RT3(x, y, z, 1, 100)$$

$$fp3$$

$$\{fp3, FP3(RT3(x, y, z, 1, 100), x, y, z)\}$$

$$sfp3 := SFP3(RT3(x, y, z, 1, 100), x, y, z)$$

$$SFP3(RT3(x, y, z, 1, 100), x, y, z)$$

$$orb3 := Orb3(RT3(x, y, z, 1, 100), x, y, z, [2, 3], 100, 110)$$

$$Orb3(RT3(x, y, z, 1, 100), x, y, z, [2, 3], 100, 110)$$

$$e := 10 \tag{4}$$