MA110 -

MA110 - 12/7/16.

Eliminate the parameter -

Find an equation whose graph contains the parametric curve

$\underline{y = t+1}$, $x = t^2$.

~~Solution~~ -

$t = y-1$. Solving $y = t+1$ for t.

Substitute for t

in $x = t^2$

$x = (y-1)^2$

$x = y^2 - 2y + 1$.

Give a parametrization of the ellipse

$$\frac{x^2}{4} + \frac{(y-2)^2}{9} = 1.$$

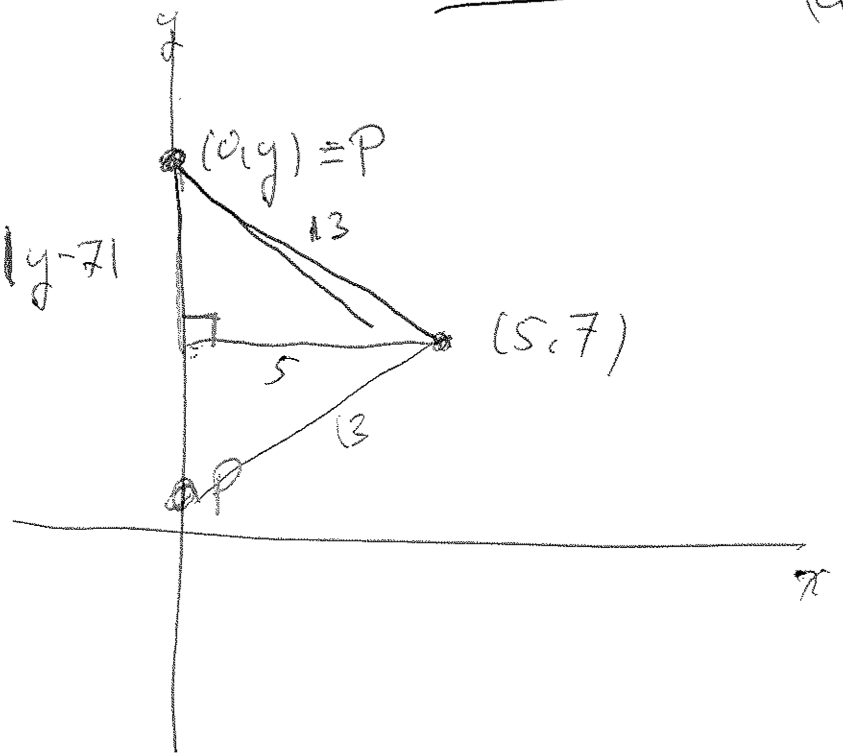
Recall $\cos^2(t) + \sin^2(t) = 1$

$x = 2\cos(t)$. $y - 2 = 3\sin(t)$.

Then

$$\frac{(2\cos(t))^2}{4} + \frac{(3\sin(t))^2}{9}$$

Exam 1 F16 #11



~~dist ((y,0)~~

(a) $\text{dist}((0,y),(5,7)) = 13$

Pythagorean/Dist. formula tells us

(a) $\sqrt{|y-7|^2 + 5^2} = 13$

or

$\sqrt{(y-7)^2 + 5^2} = 13.$

$(y-7)^2 + 5^2 = 13^2 = 169$

$(y-7)^2 = 169 - 25$

$= 144.$

$y - 7 = \pm 12.$

$y = 7 \pm 12 = 19$ or $-5.$

$P = (0,19)$ or $(0,-5)$

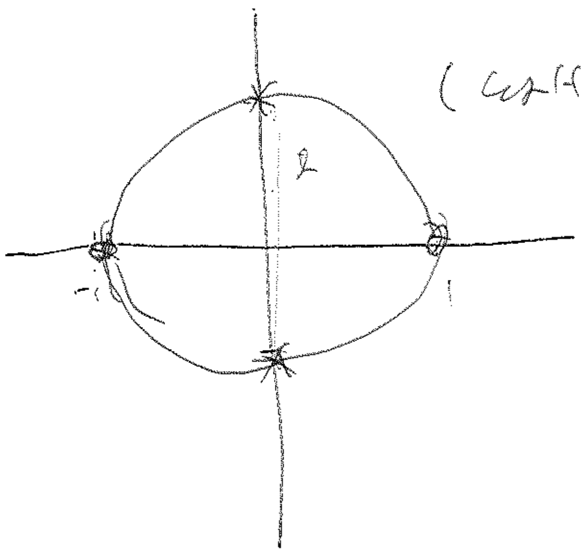
- Distance formula
- Solving quadratics.

$$\frac{4}{4}\cos^2(t) + \frac{9}{9}\sin^2(t)$$
$$= 1.$$

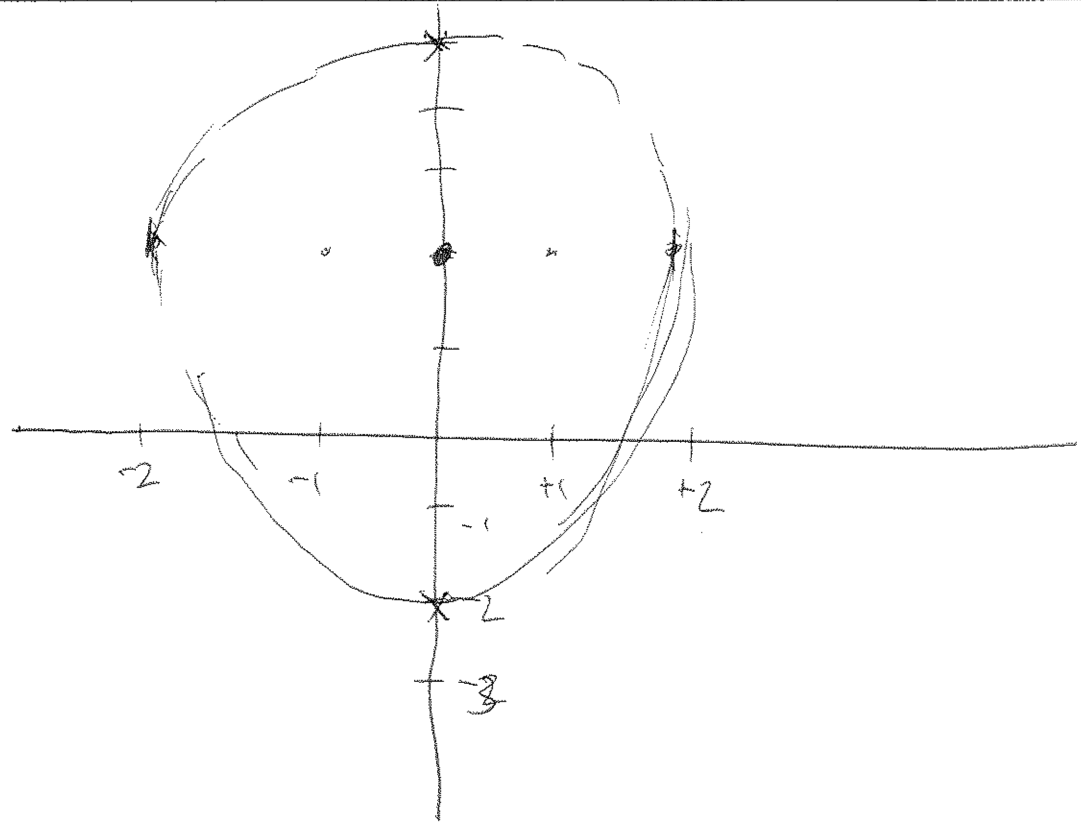
Thus

$$x = 2\cos(t)$$
$$y = 2+3\sin(t)$$

parametrizes this ellipse.



$(\cos(t), \sin(t))$



#15.

$\cancel{f(x) = \sqrt{2x+4}}$

$$f(x) = \frac{\sqrt{2x+4}}{x-1}.$$

(a) $f(0) = \dfrac{\sqrt{2\cdot 0 + 4}}{0-1}$.

$= \dfrac{\sqrt{4}}{-1} = -2.$

(b) $f(6) = \dfrac{\sqrt{12+4}}{6-1}$

$= 4/5.$

(b) Find the domain –

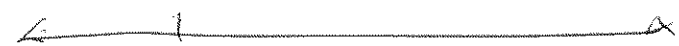
– Domain is largest set where the function is defined –

+ Don't divide by zero.

+ No square roots of neg. #'s.

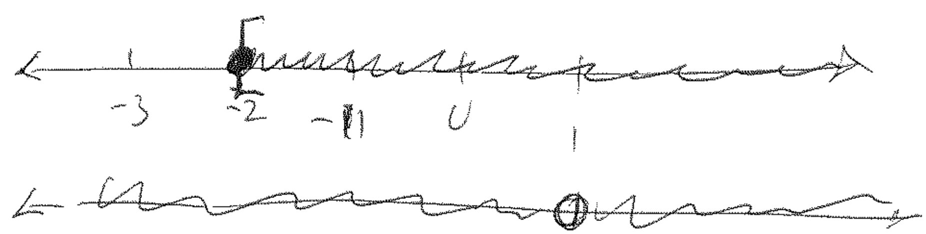
$$f(x) = \frac{\sqrt{2x+4}}{x-1}.$$

$2x+4 \geq 0$



$x-1 \neq 0$, $x \neq 1$.

$2x \geq -4$, $x \geq -2$



Domain is $[-2, 1) \cup (1, \infty)$

- Functions
- Domains.
- Interval notation.