

L07: Parametric Geometry

$a^2 = 2ab + b^2 = (a+b)^2$
 $\cos \frac{A}{2} = \pm \sqrt{\frac{1+\cos A}{2}}$
 $x^2 - a^2 = (x+a)(x-a)$
 $\cosh^2(x) - \sinh^2(x) = 1$
 $\tanh^2(x) + \operatorname{sech}^2(x) = 1$
 $\csc(-x) = -\csc(x)$
 $\lim_{h \rightarrow 0} \frac{f(x_0+h) - f(x_0)}{h} = f'(x_0)$
 $\sinh(x) = \frac{e^x - e^{-x}}{2}$
 $X_{k+1} = (X_k + y/X_k)^{n-1} / 2$
 $\sin \frac{A}{2} = \sqrt{\frac{1-\cos A}{2}}$
 $S = \sqrt{\sum_{i=1}^N (x_i - \bar{x})^2}$
 $\log_n m = \frac{\log m}{\log n}$
 $\operatorname{sech}(x) = 1/\cosh(x) = 2/(e^x + e^{-x})$
 $C_{n,r} = \frac{n!}{r!(n-r)!}$
 $x^2 + 2ax + a^2 = (x+a)^2$
 $\cos(-x) = \cos(x)$
 $\operatorname{arccosh}(z) = \ln(z + \sqrt{z^2 - 1})$
 $\cosh(x) = (e^x + e^{-x})/2$
 $\operatorname{csch}(x) = (e^x - e^{-x})/2$
 $\sim \forall x [\sim p(x)] \equiv \exists x [p(x)]$
 $\sim (p \wedge q) \equiv \sim p \vee \sim q$

$\forall x \forall y [p(x,y)] \equiv \exists x \exists y [\sim p(x,y)]$
 $\operatorname{arccoth}(z) = 1/2 \ln((z+1)/(z-1))$
 $\sinh(x) = (e^x - e^{-x})/2$
 $p \rightarrow F \equiv \sim p$
 $p \wedge T \equiv p$
 $d = |x_1 - x_2|$
 $y^{1/n} = x$
 $(a^m)^n = a^{m \times n}$
 $Me = L + I$
 $a^m \times a^n = a^{m+n}$
 $\sec(-x) = \sec(x)$
 $\tan(-x) = -\tan(x)$
 $\operatorname{arccsch}(z) = \ln(1 + \sqrt{1+z^2})/z$
 $\operatorname{sch}(z) = \cos(iz)$
 $b^2 = (a+b)^2$
 $\operatorname{csch}(x) = 1/\sinh(x) = 2/(e^x - e^{-x})$
 $x = y^2$
 $(ab)^m = a^m b^m$
 $\times [a > 0, b > 0]$
 $\frac{P(x)}{Q(x)} = G(x) + \frac{R(x)}{Q(x)}$

$\sqrt{A} = y_i * 2 \exp f(x_0+h) - f(x_0)$
 $(x_1, y_1) \rightarrow (x_2, y_2)$
 $(a^m)^n = a^{m \times n}$
 $\left[\frac{\frac{n}{2} - F}{f} \right]$
 $a^m a^n = a^{m-n}$
 $(-1, 0)$
 $(0, -1)$
 $(0, 1)$
 $(1, 0)$
 P_1
 P_2
 P_1'
 P_2'

$1. P \rightarrow q$
 $2. q \rightarrow r$
 $1. P \wedge q \} p \text{ or } q$
 $2. q \rightarrow s$
 $1. p \} p \vee q$
 $3. p \vee q$

$\sqrt{2}$
 $\frac{\pi}{4}$
 1

$\sqrt{3}$
 $\frac{\pi}{6}$
 2
 1

h
 r
 P
 P_1
 P_2
 P_1'
 P_2'

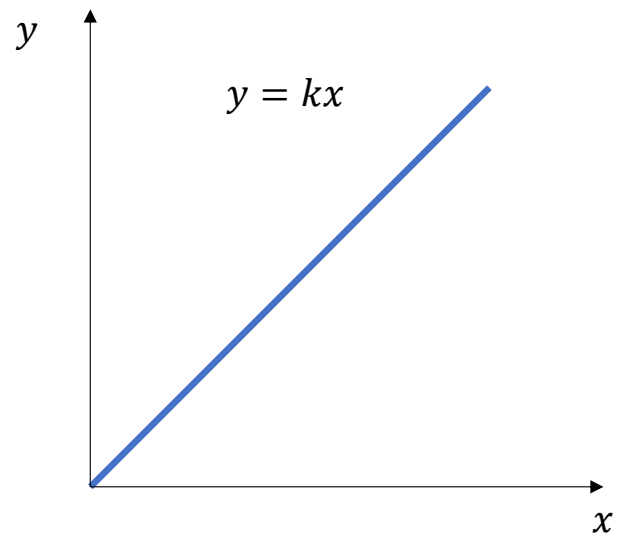
$V(-2, 0)$
 A
 C
 B
 D

$y = x^2$
 $y = x$
 $x = y^2$

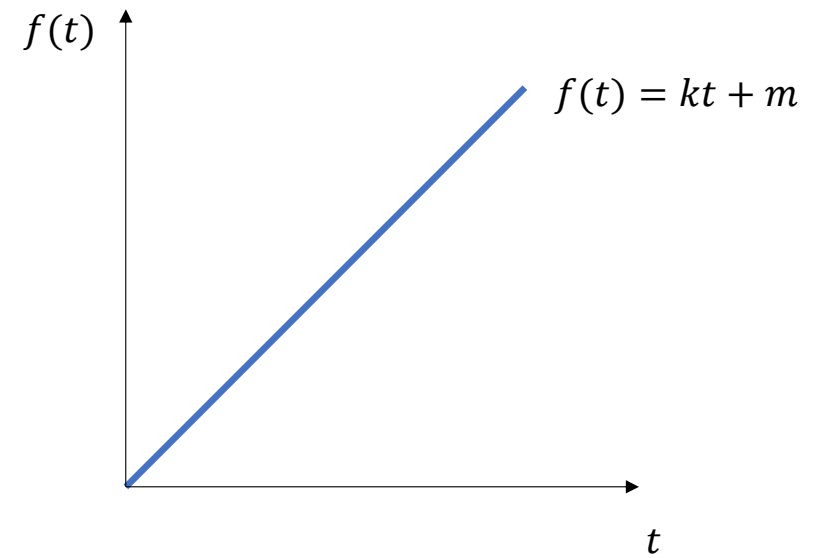
$P_{n,r} = \frac{n!}{(n-r)!}$
 A
 B
 C
 D

$\square a$
 $\text{Square} = a^2$

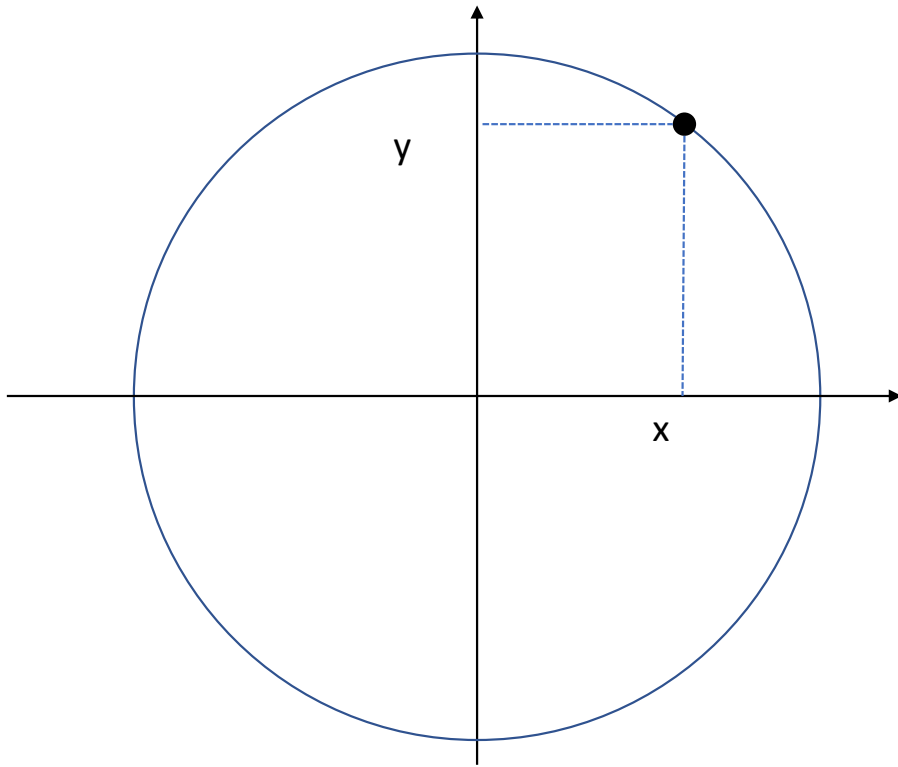
$\operatorname{trapezoid} = h/2 (b_1 + b_2)$



$$kx + y = m$$



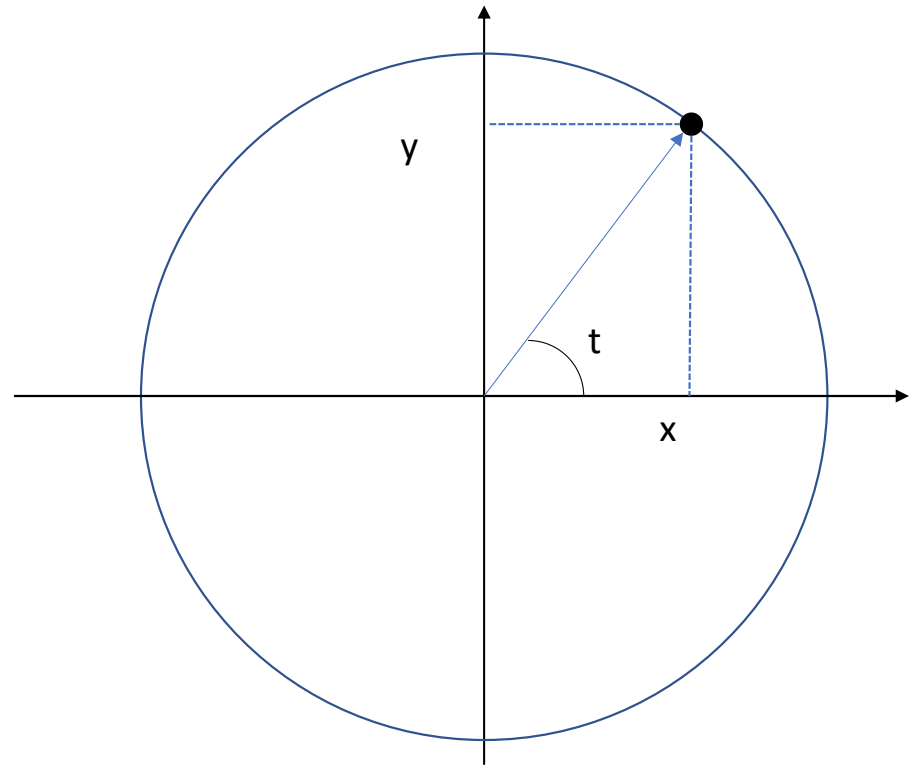
$$x = t,$$
$$f(t) = kt + m$$



$$x^2 + y^2 = r^2$$

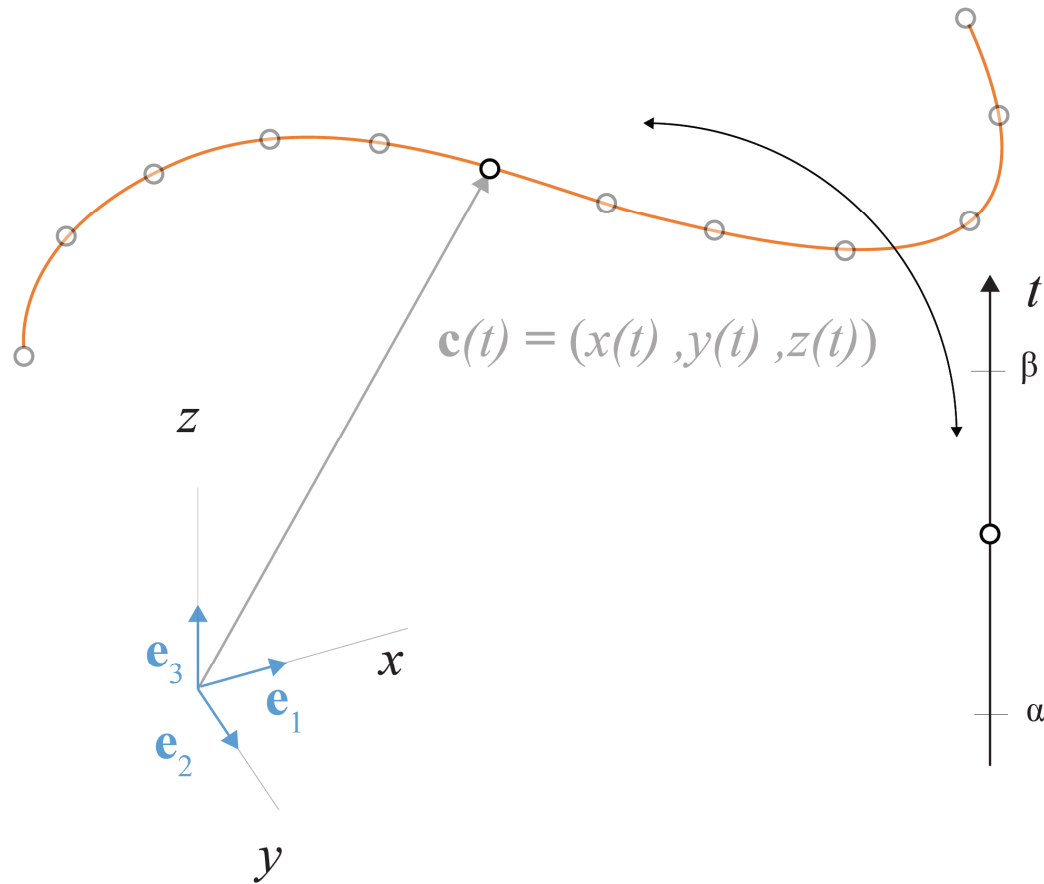
$$x = \pm \sqrt{r^2 - y^2}$$

$$y = \pm \sqrt{r^2 - x^2}$$

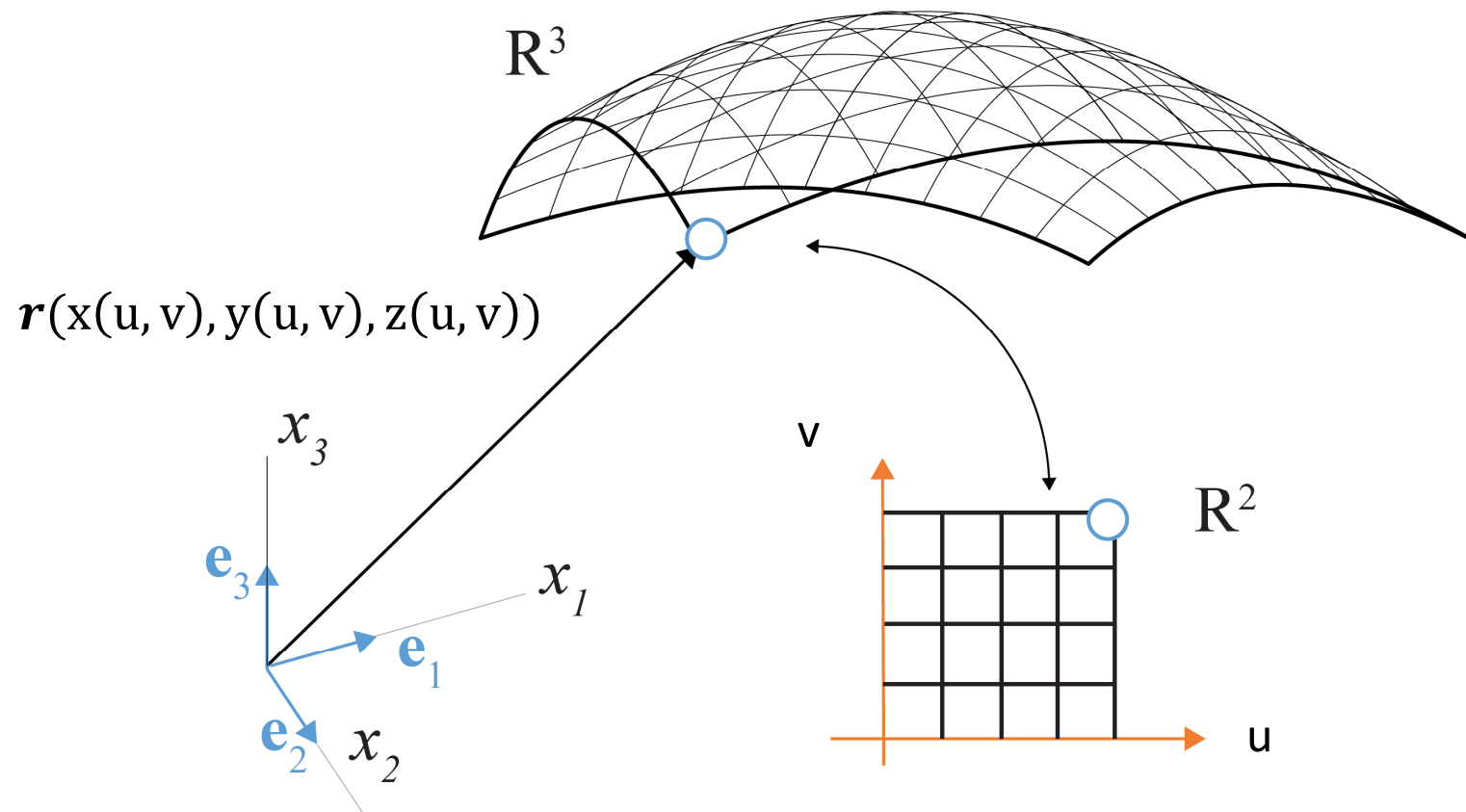


$$x = r \cos(t) \quad y = r \sin(t)$$

$$0 \leq t \leq 2\pi$$



$$\mathbf{f}(t) = x(t)\mathbf{e}_1 + y(t)\mathbf{e}_2 + z(t)\mathbf{e}_3$$



$$\mathbf{r}(u, v) = x(u, v)\mathbf{e}_1 + y(u, v)\mathbf{e}_2 + z(u, v)\mathbf{e}_3$$