Cheat sheet on Vectors and Points

Name	Code	Math	Meaning
Vector reference	VCT V;	V	Declares **pointer** to yet unknown VCT object
Copy of vector	W=V(U);	W=U	Makes a **copy** of object U and set W to point to it
Coordinates	V.x, V.y	V.x, V.y	in pixels, x=right, y=down
Vector from coord	V(u,v)	<u,v>	Makes VCT objects with coordinates <u,v>
Vector rotated 90°	R(U)	U°	Makes VCT version of U rotated 90° cw
Vector rotated w	R(U,w)	U°w	Makes VCT version of U rotated cw by w radians
Inversed vector	M(V)	-V	Makes opposite vector
Scaled vector	V(s,U)	sU	Makes new VCT sU, does NOT scale U
Vector sum	V(U,W)	U+W	Makes VCT equal to sum
Scaled vector sum	V(U,t,W)	U+tW	Makes VCT U + (W scaled by t)
Scaled vector sum	V(s,U,t,W)	sU+tW	Makes VCT sU+tW
Divided vector	V(1./d,U)	U/d	Makes new VCT U/d
Norm of vector	n(U)	|U|	Returns scalar = length of U
Normalized vector	U(V)	$\underline{V}$	Makes new VCT V/|V|, does not change V
Angle of vectors	angle(U,W)	U^W	angle in [-π, π] cw from direction of U to the one of W
Vector LERP	L(U,t,W)	L(U,t,W)	Makes VCT as linear interpolation (1-t)U+tW
Vector LPM	S(U,t,W)	S(U,t,W)	Makes Log Polar Morph $m^tU°(tw)$ with m=|W|/|U|, w=U^W
Dot product	dot(U,W)	U•W	scalar |U| |W| **cos**(U^W)
Det product	det(U,W)	U:W	scalar |U| |W| **sin**(U^W) = U°•V
Point pointer	PNT Q;	Q	Makes pointer to yet unknown PNT object
Coordinates	Q.x, Q.y	Q.x, Q.y	in pixels, dx=right, dy=down
Make point	PNT Q=P(x,y);		Makes PNT object (x,y) and PNT pointer Q to it
Point object	P(u,v)	(u,v)	Makes PNT objects with coordinates (u,v)
Change point	A.setTo(B);		Sets coordinates of A to those of B
Copy of point	Q=P(R);		Makes a copy of object R and set Q to point to it
Vector between pts	V(A,B)	AB	Makes VCT object "B-A" from A to B
Normalized vector	U(A,B)	$\underline{AB}$	Returns $\underline{AB}/\underline{\lvert AB\rvert}$, unit vector from A towards B
Point+vector	P(A,U)	A+U	Makes PNT A+U
Point+s*vector	P(A,s,U)	A+sU	Makes PNT A+sU
Move by vector	A.translate(V);		Changes A to A+V
Dilate from F	A.dilateWrtPNT(s,F);		Changes A to F+sFA
Rotate about F	A.rotateWrtPNT(w,F);		Changes A to F+FA°w
Point LERP	L(A,t,B)	L(A,t,B)	Returns A+tAB
Timed LERP	L(a,A,b,B,t)	L(a,A,b,B,t)	Returns A+(t-a)/(b-a)AB
Mouse	Mouse()		Returns PNT for current mouse location
Previous mouse	PMouse()		Returns PNT for mouse location at previous frame
Screen center	ScreenCenter()		Returns PNT for center of the screen
Label point	A.writeLabel("A");		Displays "A" in an ellipse
Draw circle	show(C,r);		Draws (filled) circle with center C and radius r
Draw edge	show(A,B);		Draws edge [A,B]
Draw hat	show(A,B,C);		Draws edges [A,B] & [B,C]
Draw triangle	showLoop(A,B,C);		Draws triangle [A,B,C]
Draw quad	showLoop(A,B,C,D);		Draws quad [A,B,C,D]
Draw segments	showPolyline(A,B,C);		Draws [A,B] & [B,C]
Draw segments	showPolyline (A,B,C,D);		Draws [A,B] & [B,C] & [C,D]
Draw arrow PV	show(P,V);		Draws V as arrow starting from point P
Draw arrow PsV	show(P,s,V);		Draws sV as arrow starting from point P
Draw arrow PVcS	show(P,V,c,S);		Draws V as arrow from P with color c & text S
Label point P	circledLabel(P,"X");		Writes "X" inside an ellipse centered at P