

Dégagement d'un gardien de but

Fiche professeur

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(%i1) h(t,V,a):=-5*t^2+V*sin(a)*t;
(%o1) h(t,V,a):=(-5)t^2+Vsin(a)t

(%i2) d(t,V,a):=V*cos(a)*t;
(%o2) d(t,V,a):=Vcos(a)t

(%i3) h(2,25,30*%pi/180);
(%o3) 5

(%i4) solve([h(t,V,a)=0],[t]);
(%o4) [t =  $\frac{\sin(a)V}{5}$ , t = 0]

(%i5) solve([h(t,25,30*%pi/180)=0],[t]);
(%o5) [t =  $\frac{5}{2}$ , t = 0]

(%i9) d(5/2,25,30*%pi/180);
(%o9)  $\frac{125\sqrt{3}}{4}$ 

(%i7) d((sin(a)*V)/5,V,a);
(%o7)  $\frac{\cos(a)\sin(a)V^2}{5}$ 
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(%i8) f(a):=(cos(a)*sin(a)*V^2)/5;
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(%o8) f(a):=
$$\frac{\cos(a)\sin(a)V^2}{5}$$

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(%i10) diff(f(a),a,1);
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(%o10) 
$$\frac{\cos(a)^2 V^2}{5} - \frac{\sin(a)^2 V^2}{5}$$

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(%i11) factor(%);
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(%o11) 
$$-\frac{(\sin(a) - \cos(a))(\sin(a) + \cos(a))V^2}{5}$$

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(%i12) solve([x=d(t,V,a)], [t]);
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(%o12) [ t = 
$$\frac{x}{\cos(a)V}$$
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(%i13) h(x/(cos(a)*V),V,a);
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(%o13) 
$$\frac{\sin(a)x}{\cos(a)} - \frac{5x^2}{\cos(a)^2 V^2}$$

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