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Anti Geometry of Independent Suspension Formulas

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List of 17 Anti Geometry of Independent Suspension Formulas

Anti Geometry of Independent Suspension

1) Angle between IC and Ground

Open Calculator

fx $$\Phi R = a\tan\left(\frac{SVSA_h}{SVSA_l}\right)$$

ex $$18.43495^\circ = a\tan\left(\frac{200mm}{600mm}\right)$$

2) Camber Change Rate

Open Calculator

fx $$\theta = a\tan\left(\frac{1}{fvsa}\right)$$

ex $$36.89742^\circ = a\tan\left(\frac{1}{1332mm}\right)$$

3) Front View Swing Arm

Open Calculator

fx $$fvsa = \frac{\frac{a_{tw}}{2}}{1 - RC}$$

ex $$1332.667mm = \frac{\frac{1999mm}{2}}{1 - 0.25}$$

4) Height of Centre of Gravity from Road Surface from Percentage Anti Dive

Open Calculator

$$h = \frac{(\%B_f) \cdot \left(\frac{SVSA_h}{SVSA_l}\right) \cdot b_{ind}}{\%AD_f}$$

$$10000mm = \frac{(60) \cdot \left(\frac{200mm}{600mm}\right) \cdot 1350mm}{2.7}$$

5) Height of Centre of Gravity from Road Surface from Percentage Anti Lift

Open Calculator

$$h = \frac{(\%B_r) \cdot \left(\frac{SVSA_h}{SVSA_l}\right) \cdot b_{ind}}{\%AL_r}$$

$$10000mm = \frac{(60.88889) \cdot \left(\frac{200mm}{600mm}\right) \cdot 1350mm}{2.74}$$

6) Percent Anti Squat

Open Calculator

$$\%AS = \left(\frac{\tan(\Phi R)}{\frac{h}{b_{ind}}}\right) \cdot 100$$

$$4.498704 = \left(\frac{\tan(18.43^\circ)}{\frac{10000mm}{1350mm}}\right) \cdot 100$$

7) Percentage Anti Dive on Front

Open Calculator

fx
$$\%AD_f = (\%B_f) \cdot \frac{\frac{SVSA_h}{SVSA_l}}{\frac{h}{b_{ind}}}$$

ex
$$2.7 = (60) \cdot \frac{\frac{200mm}{600mm}}{\frac{10000mm}{1350mm}}$$

8) Percentage Anti Lift

Open Calculator

fx
$$\%AL_r = (\%B_f) \cdot \frac{\frac{SVSA_h}{SVSA_l}}{\frac{h}{b_{ind}}}$$

ex
$$2.7 = (60) \cdot \frac{\frac{200mm}{600mm}}{\frac{10000mm}{1350mm}}$$

9) Percentage Front Braking given Percentage Anti Dive

Open Calculator

fx
$$\%B_f = \frac{\%AD_f}{\frac{\frac{SVSA_h}{SVSA_l}}{\frac{h}{b_{ind}}}}$$

ex
$$60 = \frac{2.7}{\frac{\frac{200mm}{600mm}}{\frac{10000mm}{1350mm}}}$$

10) Percentage Rear Braking given Percentage Anti Lift

Open Calculator

fx $$\%B_r = \frac{\%AL_r}{\frac{\frac{SVSA_h}{SVSA_l}}{\frac{h}{b_{ind}}}}$$

ex $$60.88889 = \frac{2.74}{\frac{\frac{200mm}{600mm}}{\frac{10000mm}{1350mm}}}$$

11) Roll Camber

Open Calculator

fx $$RC = \frac{\theta c}{RA}$$

ex $$0.25 = \frac{2^\circ}{8^\circ}$$

12) Side View Swing Arm Height given Percentage Anti Dive

Open Calculator

fx $$SVSA_h = \frac{\%AD_f}{(\%B_f) \cdot \frac{\frac{1}{SVSA_l}}{\frac{h}{b_{ind}}}}$$

ex $$200mm = \frac{2.7}{(60) \cdot \frac{\frac{1}{600mm}}{\frac{10000mm}{1350mm}}}$$

13) Side View Swing Arm Height given Percentage Anti Lift

Open Calculator

$$\mathrm{SVSA_h} = \frac{\%\mathrm{AL_r}}{(\%\mathrm{B_r}) \cdot \frac{\frac{1}{\mathrm{SVSA_l}}}{\frac{\mathrm{h}}{\mathrm{b_{ind}}}}}$$

$$200\mathrm{mm} = \frac{2.74}{(60.88889) \cdot \frac{\frac{1}{600\mathrm{mm}}}{\frac{10000\mathrm{mm}}{1350\mathrm{mm}}}}$$

14) Side View Swing Arm Length given Percentage Anti Dive

Open Calculator

$$\mathrm{SVSA_l} = \frac{(\%\mathrm{B_f}) \cdot \frac{\mathrm{SVSA_h}}{\frac{\mathrm{h}}{\mathrm{b_{ind}}}}}{\%\mathrm{AD_f}}$$

$$600\mathrm{mm} = \frac{(60) \cdot \frac{200\mathrm{mm}}{\frac{10000\mathrm{mm}}{1350\mathrm{mm}}}}{2.7}$$

15) Side View Swing Arm Length given Percentage Anti Lift

Open Calculator

$$\mathrm{SVSA_l} = \frac{(\%\mathrm{B_r}) \cdot \frac{\mathrm{SVSA_h}}{\frac{\mathrm{h}}{\mathrm{b_{ind}}}}}{\%\mathrm{AL_r}}$$

$$600\mathrm{mm} = \frac{(60.88889) \cdot \frac{200\mathrm{mm}}{\frac{10000\mathrm{mm}}{1350\mathrm{mm}}}}{2.74}$$

16) Wheelbase of Vehicle from Percentage Anti Dive

Open Calculator

fx
$$b_{ind} = \frac{\%AD_f}{(\%B_f) \cdot \frac{\frac{SVSA_h}{SVSA_l}}{h}}$$

ex
$$1350mm = \frac{2.7}{(60) \cdot \frac{\frac{200mm}{600mm}}{10000mm}}$$

17) Wheelbase of Vehicle from Percentage Anti Lift

Open Calculator

fx
$$b_{ind} = \frac{\%AL_r}{(\%B_f) \cdot \frac{\frac{SVSA_h}{SVSA_l}}{h}}$$

ex
$$1370mm = \frac{2.74}{(60) \cdot \frac{\frac{200mm}{600mm}}{10000mm}}$$

Variables Used

- **$\%AD_f$** Percentage Anti Dive Front
- **$\%AL_r$** Percentage Anti Lift
- **%AS** Percentage Anti Squat
- **$\%B_f$** Percentage Front Braking
- **$\%B_r$** Percentage Rear Braking
- **a_{tw}** Track Width of Vehicle *(Millimeter)*
- **b_{ind}** Independent Wheelbase of Vehicle *(Millimeter)*
- **fvsa** Front View Swing Arm *(Millimeter)*
- **h** Height of CG above Road *(Millimeter)*
- **RA** Roll Angle *(Degree)*
- **RC** Roll Camber
- **$SVSA_h$** Side View Swing Arm Height *(Millimeter)*
- **$SVSA_l$** Side View Swing Arm Length *(Millimeter)*
- **θ** Camber Change Rate *(Degree)*
- **θc** Camber Angle *(Degree)*
- **ΦR** Angle between IC and Ground *(Degree)*

Constants, Functions, Measurements used

- Function: **atan**, atan(Number)
  Inverse tan is used to calculate the angle by applying the tangent ratio of the angle, which is the opposite side divided by the adjacent side of the right triangle.
- Function: **tan**, tan(Angle)
  The tangent of an angle is a trigonometric ratio of the length of the side opposite an angle to the length of the side adjacent to an angle in a right triangle.
- Measurement: **Length** in Millimeter (mm)
  Length Unit Conversion
- Measurement: **Angle** in Degree (°)
  Angle Unit Conversion

Check other formula lists

- **Anti Geometry of Independent Suspension Formulas**

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