calculatoratoz.com

unitsconverters.com

Rear Wheel Braking for Racing Car Formulas

Calculators!

Examples!

Conversions!

Bookmark **calculatoratoz.com**, **unitsconverters.com**

Widest Coverage of Calculators and Growing - **30,000+ Calculators!**

Calculate With a Different Unit for Each Variable - **In built Unit Conversion!**

Widest Collection of Measurements and Units - **250+ Measurements!**

Feel free to SHARE this document with your friends!

Please leave your feedback here...

List of 19 Rear Wheel Braking for Racing Car Formulas

Rear Wheel Braking for Racing Car 🔗

Effects on Front Wheel (FW) 🔗

1) Friction Coefficient between Wheel and Road Surface on Front Wheel 🔗

Open Calculator 🔗

$$fx \quad \mu_{FW} = \frac{W \cdot (b - x) \cdot \frac{\cos(\theta)}{R_F} - b}{h}$$

$$ex \quad 0.456032 = \frac{13000N \cdot (2.7m - 1.2m) \cdot \frac{\cos(10°)}{7103N} - 2.7m}{0.007919m}$$

2) Height of C.G. from Road Surface on Front Wheel 🔗

Open Calculator 🔗

$$fx \quad h = \frac{W \cdot (b - x) \cdot \frac{\cos(\theta)}{R_F} - b}{\mu_{FW}}$$

$$ex \quad 0.007919m = \frac{13000N \cdot (2.7m - 1.2m) \cdot \frac{\cos(10°)}{7103N} - 2.7m}{0.456032}$$

3) Horizontal Distance of C.G from Rear Axle on Front Wheel 🔗

Open Calculator 🔗

$$fx \quad x = (b - \mu_{FW} \cdot h) - R_F \cdot \frac{b - \mu_{FW} \cdot h}{W \cdot \cos(\theta)}$$

ex

$$1.200396m = (2.7m - 0.456032 \cdot 0.007919m) - 7103N \cdot \frac{2.7m - 0.456032 \cdot 0.007919m}{13000N \cdot \cos(10°)}$$

4) Normal Reaction Force at Front Wheel 📌

fx $R_F = W \cdot (b - x) \cdot \dfrac{\cos(\theta)}{b + \mu_{FW} \cdot h}$

Open Calculator 📌

ex $7103N = 13000N \cdot (2.7m - 1.2m) \cdot \dfrac{\cos(10°)}{2.7m + 0.456032 \cdot 0.007919m}$

5) Slope of Road on Front Wheel 📌

fx $\theta = a\cos\left(\dfrac{R_F}{W \cdot \frac{b-x}{b+\mu_{FW}\cdot h}} \right)$

Open Calculator 📌

ex $10° = a\cos\left(\dfrac{7103N}{13000N \cdot \frac{2.7m-1.2m}{2.7m+0.456032\cdot0.007919m}} \right)$

6) Weight of Vehicle on Front Wheel 📌

fx $W = \dfrac{R_F}{(b - x) \cdot \frac{\cos(\theta)}{b+\mu_{FW}\cdot h}}$

Open Calculator 📌

ex $13000N = \dfrac{7103N}{(2.7m - 1.2m) \cdot \frac{\cos(10°)}{2.7m+0.456032\cdot0.007919m}}$

7) Wheel Base on Front Wheel 📌

fx $b = \dfrac{R_F \cdot \mu_{FW} \cdot h + W \cdot x \cdot \cos(\theta)}{W \cdot \cos(\theta) - R_F}$

Open Calculator 📌

ex $2.7m = \dfrac{7103N \cdot 0.456032 \cdot 0.007919m + 13000N \cdot 1.2m \cdot \cos(10°)}{13000N \cdot \cos(10°) - 7103N}$

Effects on Rear Wheel (RW) 🔗

8) Breaking Retardation on Rear Wheel 🔗

Open Calculator 🔗

fx $a = [g] \cdot \left(\dfrac{\mu_{RW} \cdot (b - x) \cdot \cos(\theta)}{b + \mu_{RW} \cdot h} - \sin(\theta) \right)$

ex $0.86885 \text{m/s}^2 = [g] \cdot \left(\dfrac{0.48 \cdot (2.7\text{m} - 1.2\text{m}) \cdot \cos(10°)}{2.7\text{m} + 0.48 \cdot 0.007919\text{m}} - \sin(10°) \right)$

9) Friction Coefficient between Wheel and Road Surface on Rear Wheel 🔗

Open Calculator 🔗

fx $\mu_{RW} = \dfrac{R_R \cdot b - W \cdot x \cdot \cos(\theta)}{h \cdot (W \cdot \cos(\theta) - R_R)}$

ex $0.480028 = \dfrac{5700\text{N} \cdot 2.7\text{m} - 13000\text{N} \cdot 1.2\text{m} \cdot \cos(10°)}{0.007919\text{m} \cdot (13000\text{N} \cdot \cos(10°) - 5700\text{N})}$

10) Friction Coefficient using Retardation on Rear Wheel 🔗

Open Calculator 🔗

fx $\mu_{RW} = \dfrac{\left(\frac{a}{[g]} + \sin(\theta) \right) \cdot b}{(b - x) \cdot \cos(\theta) - \left(\left(\frac{a}{[g]} + \sin(\theta) \right) \cdot h \right)}$

ex $0.48 = \dfrac{\left(\frac{0.86885 \text{m/s}^2}{[g]} + \sin(10°) \right) \cdot 2.7\text{m}}{(2.7\text{m} - 1.2\text{m}) \cdot \cos(10°) - \left(\left(\frac{0.86885 \text{m/s}^2}{[g]} + \sin(10°) \right) \cdot 0.007919\text{m} \right)}$

11) Height of C.G. from Road Surface on Rear Wheel 🔗

Open Calculator 🔗

fx $h = \dfrac{R_R \cdot b - W \cdot x \cdot \cos(\theta)}{\mu_{RW} \cdot (W \cdot \cos(\theta) - R_R)}$

ex $0.007919\text{m} = \dfrac{5700\text{N} \cdot 2.7\text{m} - 13000\text{N} \cdot 1.2\text{m} \cdot \cos(10°)}{0.48 \cdot (13000\text{N} \cdot \cos(10°) - 5700\text{N})}$

12) Height of C.G. using Retardation on Rear Wheel ⤴

Open Calculator ⤴

$$fx \quad h = \frac{\frac{\mu_{RW}\cdot(b-x)\cdot\cos(\theta)}{\left(\frac{a}{[g]}\right)+\sin(\theta)} - b}{\mu_{RW}}$$

$$ex \quad 0.007919m = \frac{\frac{0.48\cdot(2.7m-1.2m)\cdot\cos(10°)}{\left(\frac{0.86885m/s^2}{[g]}\right)+\sin(10°)} - 2.7m}{0.48}$$

13) Horizontal Distance of C.G. from Rear Axle on Rear Wheel ⤴

Open Calculator ⤴

$$fx \quad x = R_R \cdot \frac{b + \mu_{RW}\cdot h}{W\cdot\cos(\theta)} - \mu_{RW}\cdot h$$

$$ex \quad 1.2m = 5700N \cdot \frac{2.7m + 0.48\cdot0.007919m}{13000N\cdot\cos(10°)} - 0.48\cdot0.007919m$$

14) Horizontal Distance of C.G. using Retardation on Rear Wheel ⤴

Open Calculator ⤴

$$fx \quad x = b - \left(\left(\frac{a}{[g]} + \sin(\theta)\right)\cdot\frac{b + \mu_{RW}\cdot h}{\mu_{RW}\cdot\cos(\theta)}\right)$$

$$ex \quad 1.2m = 2.7m - \left(\left(\frac{0.86885m/s^2}{[g]} + \sin(10°)\right)\cdot\frac{2.7m + 0.48\cdot0.007919m}{0.48\cdot\cos(10°)}\right)$$

15) Normal Reaction Force at Rear Wheel ⤴

Open Calculator ⤴

$$fx \quad R_R = W\cdot(x + \mu_{RW}\cdot h)\cdot\frac{\cos(\theta)}{b + \mu_{RW}\cdot h}$$

$$ex \quad 5699.999N = 13000N\cdot(1.2m + 0.48\cdot0.007919m)\cdot\frac{\cos(10°)}{2.7m + 0.48\cdot0.007919m}$$

16) Slope of Road on Rear Wheel ⤤

$$fx \quad \theta = a \cos \left(\frac{R_R}{W \cdot \frac{x + \mu_{RW} \cdot h}{b + \mu_{RW} \cdot h}} \right)$$

$$ex \quad 9.999966° = a \cos \left(\frac{5700N}{13000N \cdot \frac{1.2m + 0.48 \cdot 0.007919m}{2.7m + 0.48 \cdot 0.007919m}} \right)$$

17) Weight of Vehicle on Rear Wheel ⤤

$$fx \quad W = \frac{R_R}{(x + \mu_{RW} \cdot h) \cdot \frac{\cos(\theta)}{b + \mu_{RW} \cdot h}}$$

$$ex \quad 13000N = \frac{5700N}{(1.2m + 0.48 \cdot 0.007919m) \cdot \frac{\cos(10°)}{2.7m + 0.48 \cdot 0.007919m}}$$

18) Wheel Base of Vehicle using Retardation on Rear Wheel ⤤

$$fx \quad b = \frac{\left(\frac{a}{[g]} + \sin(\theta) \right) \cdot \mu_{RW} \cdot h + \mu_{RW} \cdot x \cdot \cos(\theta)}{\mu_{RW} \cdot \cos(\theta) - \left(\frac{a}{[g]} + \sin(\theta) \right)}$$

$$ex \quad 2.7m = \frac{\left(\frac{0.86885 \text{m/s}^2}{[g]} + \sin(10°) \right) \cdot 0.48 \cdot 0.007919m + 0.48 \cdot 1.2m \cdot \cos(10°)}{0.48 \cdot \cos(10°) - \left(\frac{0.86885 \text{m/s}^2}{[g]} + \sin(10°) \right)}$$

19) Wheel Base on Rear Wheel ⤤

$$fx \quad b = \left(W \cdot (x + \mu_{RW} \cdot h) \cdot \frac{\cos(\theta)}{R_R} \right) - \mu_{RW} \cdot h$$

$$ex \quad 2.7m = \left(13000N \cdot (1.2m + 0.48 \cdot 0.007919m) \cdot \frac{\cos(10°)}{5700N} \right) - 0.48 \cdot 0.007919m$$

Variables Used

- **a** Braking Retardation *(Meter per Square Second)*
- **b** Vehicle Wheelbase *(Meter)*
- **h** Height of C.G. of Vehicle *(Meter)*
- R_F Normal Reaction at Front Wheel *(Newton)*
- R_R Normal Reaction at Rear Wheel *(Newton)*
- **W** Vehicle Weight *(Newton)*
- **x** Horizontal Distance of C.G. from Rear Axle *(Meter)*
- **θ** Road Inclination Angle *(Degree)*
- μ_{FW} Friction Coefficient on Front Wheel
- μ_{RW} Friction Coefficient on Rear Wheel

Constants, Functions, Measurements used

- Constant: **[g]**, 9.80665
  Gravitational acceleration on Earth
- Function: **acos**, acos(Number)
  The inverse cosine function, is the inverse function of the cosine function. It is the function that takes a ratio as an input and returns the angle whose cosine is equal to that ratio.
- Function: **cos**, cos(Angle)
  Cosine of an angle is the ratio of the side adjacent to the angle to the hypotenuse of the triangle.
- Function: **sin**, sin(Angle)
  Sine is a trigonometric function that describes the ratio of the length of the opposite side of a right triangle to the length of the hypotenuse.
- Measurement: **Length** in Meter (m)
  Length Unit Conversion 🡵
- Measurement: **Acceleration** in Meter per Square Second (m/s²)
  Acceleration Unit Conversion 🡵
- Measurement: **Force** in Newton (N)
  Force Unit Conversion 🡵
- Measurement: **Angle** in Degree (°)
  Angle Unit Conversion 🡵

Check other formula lists

- **All Wheel Braking for Racing Car Formulas**
- **Front Wheel Braking for Racing Cars Formulas**

- **Rear Wheel Braking for Racing Car Formulas**

Feel free to SHARE this document with your friends!

PDF Available in

English Spanish French German Russian Italian Portuguese Polish Dutch

8/20/2024 | 8:17:18 AM UTC   *Please leave your feedback here...*