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Mirrors Formulas

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List of 15 Mirrors Formulas

Mirrors

Concave Mirrors

1) Focal Length of Concave Mirror

Open Calculator

fx $$f_{concave} = \frac{r_{concave}}{2}$$

ex $$0.25\text{m} = \frac{0.5\text{m}}{2}$$

2) Focal Length of Concave Mirror with Real Image

Open Calculator

fx $$f_{concave,real} = \frac{v_{concave,real} \cdot u_{concave,real}}{v_{concave,real} + (u_{concave,real})}$$

ex $$0.0375 = \frac{0.10\text{m} \cdot 0.06\text{m}}{0.10\text{m} + (0.06\text{m})}$$

3) Focal Length of Concave Mirror with Virtual Image

Open Calculator

fx $$f_{concave,virtual} = \frac{v_{concave,virtual} \cdot u_{concave,virtual}}{u_{concave,virtual} - v_{concave,virtual}}$$

ex $$-0.173333 = \frac{-0.2\text{m} \cdot 1.30\text{m}}{1.30\text{m} - -0.2\text{m}}$$

4) Image Distance of Concave Mirror with Virtual Image

Open Calculator

$$v_{concave,virtual} = \frac{f_{concave,virtual} \cdot u_{concave,virtual}}{(u_{concave,virtual}) + f_{concave,virtual}}$$

ex $$-0.200001\text{m} = \frac{-0.173334 \cdot 1.30\text{m}}{(1.30\text{m}) + -0.173334}$$

5) Magnification of Concave Mirror with Real Image

Open Calculator

$$m_{concave,real} = \frac{v_{concave,real}}{u_{concave,real}}$$

ex $$1.666667 = \frac{0.10\text{m}}{0.06\text{m}}$$

6) Magnification of Concave Mirror with Virtual Image

Open Calculator

$$m_{concave,virtual} = \frac{v_{concave,virtual}}{u_{concave,virtual}}$$

ex $$-0.153846 = \frac{-0.2\text{m}}{1.30\text{m}}$$

7) Magnification of Concave Mirror with Virtual Image using Height

Open Calculator

$$m_{concave} = \frac{h_{image,concave}}{h_{object,concave}}$$

ex $$2.5 = \frac{0.70\text{m}}{0.28\text{m}}$$

8) Object Distance in Concave Mirror with Real Image

Open Calculator

fx $$u_{concave,real} = \frac{v_{concave,real} \cdot (f_{concave,real})}{v_{concave,real} - (f_{concave,real})}$$

ex $$0.06m = \frac{0.10m \cdot (0.0375)}{0.10m - (0.0375)}$$

9) Object Distance in Concave Mirror with Virtual Image

Open Calculator

fx $$u_{concave,virtual} = \frac{(f_{concave,virtual}) \cdot (v_{concave,virtual})}{(f_{concave,virtual}) - (v_{concave,virtual})}$$

ex $$1.300038m = \frac{(-0.173334) \cdot (-0.2m)}{(-0.173334) - (-0.2m)}$$

Convex Mirrors

10) Focal Length of Convex Mirror

Open Calculator

fx $$f_{convex} = \frac{1}{\left(\frac{1}{u_{convex}}\right) + \left(\frac{1}{v_{convex}}\right)}$$

ex $$-2.798801m = \frac{1}{\left(\frac{1}{0.4667m}\right) + \left(\frac{1}{-0.4m}\right)}$$

11) Focal Length of Convex Mirror given Radius

Open Calculator

fx $$f_{convex} = -\frac{r_{convex}}{2}$$

ex $$-2.798801\text{m} = -\frac{5.597602\text{m}}{2}$$

12) Image Distance of Convex Mirror

Open Calculator

fx $$v_{convex} = \frac{u_{convex} \cdot f_{convex}}{u_{convex} - (f_{convex})}$$

ex $$-0.4\text{m} = \frac{0.4667\text{m} \cdot -2.798801\text{m}}{0.4667\text{m} - (-2.798801\text{m})}$$

13) Magnification of Convex Mirror

Open Calculator

fx $$m_{convex} = \frac{v_{convex}}{u_{convex}}$$

ex $$-0.857082 = \frac{-0.4\text{m}}{0.4667\text{m}}$$

14) Magnification of Convex Mirror using Height

Open Calculator

fx $$m_{convex} = \frac{h_{image,convex}}{h_{object,convex}}$$

ex $$-0.857008 = \frac{-0.654\text{m}}{0.76312\text{m}}$$

15) Object Distance in Convex Mirror

Open Calculator

fx $$u_{convex} = \frac{v_{convex} \cdot f_{convex}}{v_{convex} - f_{convex}}$$

ex $$0.4667\text{m} = \frac{\text{-}0.4\text{m} \cdot \text{-}2.798801\text{m}}{\text{-}0.4\text{m} - \text{-}2.798801\text{m}}$$

Variables Used

- $f_{concave}$ Focal Length of Concave Mirror *(Meter)*
- $f_{concave,real}$ Focal Length of Concave Mirror with Real Image
- $f_{concave,virtual}$ Focal Length of Concave Mirror with Virtual Image
- f_{convex} Focal Length of Convex Mirror *(Meter)*
- $h_{image,concave}$ Image Height in Concave Mirror *(Meter)*
- $h_{image,convex}$ Image Height in Convex Mirror *(Meter)*
- $h_{object,concave}$ Object Height in Concave Mirror *(Meter)*
- $h_{object,convex}$ Object Height in Convex Mirror *(Meter)*
- $m_{concave}$ Magnification of Concave Mirror
- $m_{concave,real}$ Magnification of Concave Mirror with Real Image
- $m_{concave,virtual}$ Magnification of Concave Mirror with Virtual Image
- m_{convex} Magnification of Convex Mirror
- $r_{concave}$ Radius of Concave Mirror *(Meter)*
- r_{convex} Radius of Convex Mirror *(Meter)*
- $u_{concave,real}$ Object Distance in Concave Mirror Real Image *(Meter)*
- $u_{concave,virtual}$ Object Distance in Concave Mirror Virtual Image *(Meter)*
- u_{convex} Object Distance of Convex Mirror *(Meter)*
- $v_{concave,real}$ Image Distance of Concave Mirror Real Image *(Meter)*
- $v_{concave,virtual}$ Image Distance of Concave Mirror Virtual Image *(Meter)*
- v_{convex} Image Distance of Convex Mirror *(Meter)*

Constants, Functions, Measurements used

- Measurement: **Length** in Meter (m)
  Length Unit Conversion

Check other formula lists

- **Lenses and Refraction Formulas**
- **Mirrors Formulas**

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