Trigonometry

Figure out what is known, and which angle you want, and then pick the correct equation - for sine, cosine or tangent. Show me how to do this. ...

Substitute the known sides into the equation you picked. Show me how to do this. ...

Use the inverse function to solve this equation for the angle that you need. Show me how to do this.

$$\sin(2a) = \frac{2\tan(a)}{1 + \tan^2(a)}$$

$$\cos(2a) = \frac{1 - \tan^2(a)}{1 + \tan^2(a)}$$

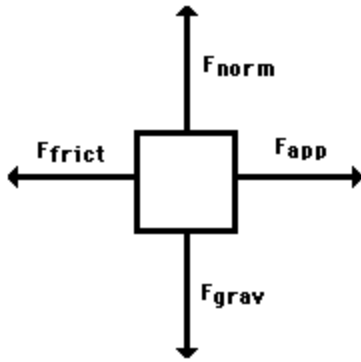$$\tan(2a) = \frac{2\tan(a)}{1 - \tan^2(a)}.$$

This are Rational Expressions

A way of remembering how to compute the sine, cosine, and tangent of an angle.

SOH stands for Sine equals Opposite over Hypotenuse.


CAH stands for Cosine equals Adjacent over Hypotenuse.

TOA stands for Tangent equals Opposite over Adjacent.

F norm

F frict

F app

F grav

Free body Diagrams

These are used to see the relative magnitude and the direction of all forces acting upon an object.

The free-body diagram above depicts four forces acting upon the object. Objects do not necessarily always have four forces

N

F

W
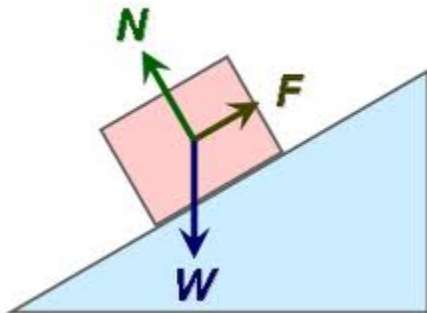
This is another example of free body diagrams. Where the force is being pushed down on the slope.

ΣF = (sum of forces) = ma

Solve this set of equations. If there are N unknowns then you need N equations. Often you

Need to include additional equations like k kFN

$f = \mu$ to solve the problem completely.

If you can draw the free body diagram than solve them are easy.