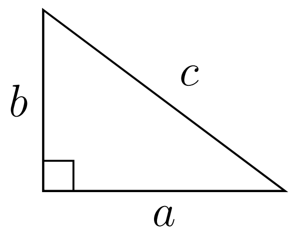
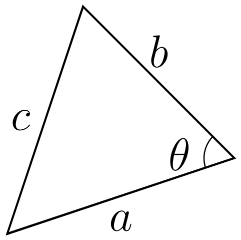
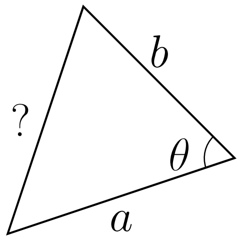
$a + ar + ar^2 + \cdots + ar^{n-1}$	Pythagoras $a^2 + b^2 = c^2$
$a + ar + ar^2 + ar^3 + \dots$	$\cos x$
$a + (a+d) + (a+2d) + \cdots + (a + (n-1)\,d)$	$\sin x$
$\cos^2(x)$	$-\sin x$
$\sin^2 x$	$\cos x$

	Geometric series $\frac{a\left(1-r^{n}\right)}{1-r}$ if $r \neq 1.$
$\sin(90^\circ - x)$	Sum to infinity of a geometric sequence, equals $\frac{a}{1-r}$ if $\lvert r\rvert < 1,$ diverges otherwise.
$\cos(90^\circ - x)$	Arithmetic series $\frac{n}{2}\left(2a + (n-1)d\right)$
$\sin(-x)$	$1 - \sin^2 x$
$\cos(-x)$	$1 - \cos^2 x$

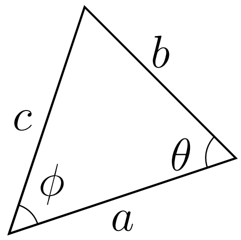
Area?



Circle with centre
(a, b) and radius r



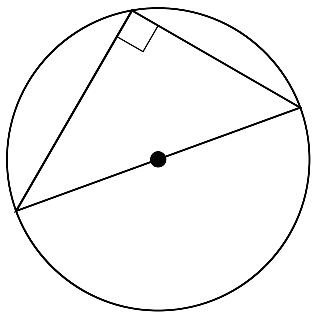
$$m_1 m_2 = -1$$



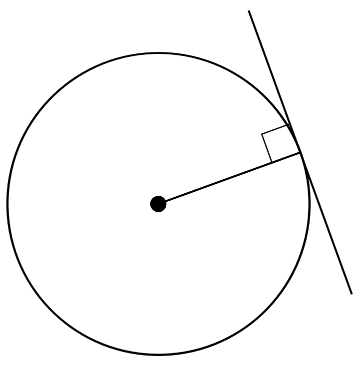
Same gradient

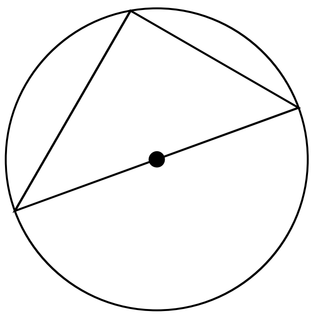
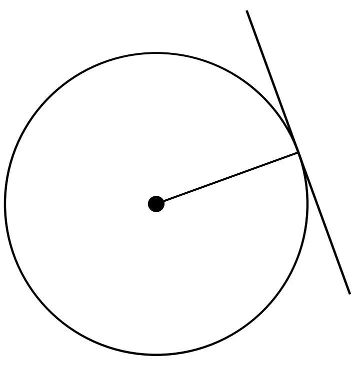
$$m_1 = m_2$$

The line through
(x_1, y_1) with gradient m



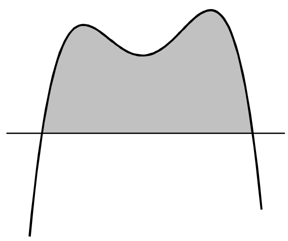
The distance between
(x_1, y_1) and (x_2, y_2)



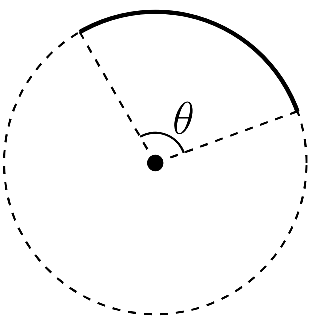
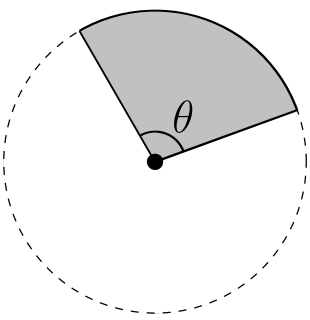
$(x-a)^2+(y-b)^2=r^2$	$\frac{1}{2}ab\sin\theta$
The lines $y=m_1x+c_1$ and $y=m_2x+c_2$ are perpendicular	Cosine rule $c^2=a^2+b^2-2ab\cos\theta$
The lines $y=m_1x+c_1$ and $y=m_2x+c_2$ are parallel	Sine rule $\frac{\sin\theta}{c}=\frac{\sin\phi}{b}$
	$y=m(x-x_1)+y_1$
	$\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$

$f(x + a)$	$b = a^c$
$f(ax)$	ax^{a-1}
$f(ax + b)$	ke^{kx}
$(a^m)^n$	The line with gradient $f'(a)$ and value $f(a)$ at $x = a$; $y = f'(a)(x - a) + f(a)$
$(a^m)(a^n)$	The line with gradient $\frac{-1}{f'(a)}$ and value $f(a)$ at $x = a$; $y = \frac{a - x}{f'(a)} + f(a)$

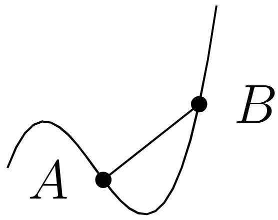
$\log_a b = c$	Translation by a units in the negative direction parallel to the x-axis
$y = x^a$ $\frac{\mathrm{d}y}{\mathrm{d}x} = ?$	Stretch by a factor of $\frac{1}{a}$ parallel to the x-axis
$y = e^{kx}$ $\frac{\mathrm{d}y}{\mathrm{d}x} = ?$	Translation by b units in the negative direction parallel to the x-axis and then a stretch by a factor of $\frac{1}{a}$ parallel to the x-axis
Tangent to $y = f(x)$ at $x = a$	a^{mn}
Normal to $y = f(x)$ at $x = a$	a^{m+n}

Area between $f(x)$ and the x-axis? 	$\binom{n}{r}p^r(1-p)^{n-r}$
$\int f'(x)\,\mathrm{d}x$	If and only if $b^2-4ac>0$
$(x+y)^n$	Factor Theorem So $p(x)=(x-a)q(x)$ for some polynomial $q(x)$
The number of ways to choose r things from n things, order doesn't matter	Therefore $p(x)=(x-a)^2q(x)$ for some polynomial $q(x)$
The number of ways to choose r things from n things, order matters	The only factors of p are 1 and p.

Given n independent events, each with probability p of success, what's the probability of exactly r successes?	$$\int_a^b f(x)\,\mathrm{d}x$$ where a and b are points with $f(a) = 0$ and $f(b) = 0$ with $a < b$, provided that $f(x) \geq 0$ in $a < x < b$.
When does $$ax^2 + bx + c = 0$$ have exactly two real solutions?	$$f(x) + c$$ for some constant c
The polynomial $p(x)$ has a root at $x = a$	$$x^n + \binom{n}{1}x^{n-1}y + \binom{n}{2}x^{n-2}y^2 + \dots$$ $$\dots + \binom{n}{n-2}x^2y^{n-2} + \binom{n}{n-1}xy^{n-1} + y^n$$
The polynomial $p(x)$ has a repeated root at $x = a$	$$\binom{n}{r} = \frac{n!}{r!(n-r)!}$$
Prime number, p	$$\frac{n!}{(n-r)!}$$

$\log_a(x^n)$	Complete the square $a\left(x+\dfrac{b}{2a}\right)^2+c-\dfrac{b^2}{4a}$
$\log_a(xy)$	Difference of two squares $(a-b)(a+b)$
$\log_a \dfrac{1}{f(x)}$	$(f(x))^2 \geq 0$ for all x.
Length? 	First solve $f'(x)=0$
Area? 	Look for turning points and check $f''(x)$, or try to complete the square. Also, check the ends of the range.

Another way to write $ax^2 + bx + c$	$n \log_a x$
$a^2 - b^2$	$\log_a x + \log_a y$
$(f(x))^2$	$-\log_a f(x)$
Turning point of $f(x)$	$2\pi r \times \dfrac{\theta}{360°}$
Maximum of a function	$\pi r^2 \times \dfrac{\theta}{360°}$

Point B gets close to fixed point A on curve C 	$-\cos\theta$
Solve $f(x) = g(x)$.	$\sin\theta$
$\cos(\theta + 360°)$	$\dfrac{1}{\tan\theta}$
$\sin(\theta + 360°)$	$\begin{pmatrix} x_2 - x_1 \\ y_2 - y_1 \end{pmatrix}$
$\tan(\theta + 180°)$	$\mathbf{a} = k\mathbf{b}$ for some real number k

$\cos(180^\circ - \theta)$	The gradient of the line AB gets close to the gradient of C at A.
$\sin(180^\circ - \theta)$	Consider sketching $y = f(x)$ and $y = g(x)$.
$\tan(90^\circ - \theta)$	$\cos\theta$
Displacement vector from (x_1, y_1) to (x_2, y_2)	$\sin\theta$
Non-zero vectors **a** and **b** are parallel	$\tan\theta$