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## Riemann-Roch theorem for curves

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Let  $C$  be a projective nonsingular curve over an algebraically closed field. If  $D$  is a divisor on  $C$ , then

$$\ell(D) - \ell(K - D) = \deg(D) + 1 - g$$

where  $g$  is the genus of the curve, and  $K$  is the canonical divisor ( $\ell(K) = g$ ). Here  $\ell(D)$  denotes the dimension of the <http://planetmath.org/node/SpaceOfFunctionsAssociatedToADivisor> of functions associated to a divisor.