The calculation of surface area and volume of k-balls inscribed in a regular prism and pyramid.

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The purpose of this project was to find relation between the volume of a prism and a truncated pyramid with regular n-sided polygon base and to show that the surface area and volume of the k-balls inscribed can be calculated if the perimeter is known. We found that the volume of the truncated pyramid is 1/3 [(P'/P)^2+(P'/P)+1] times the volume of the prism when the perimeter of the prism base is P and P' is the perimeter of the truncated pyramid. The surface area or volume formula of the k-balls inscribed in the shape of a prism with regular n-sides polygon base is Ck[pi()](P/n cotA)^d Where A=pi()/n, C is a constant for calculating surface area or volume of the k-balls inscribed in the shape of the prism, namely, we denoted C=1 and C=1/6 for calculating surface area and volume respectively. The exponent d is a constant, d=2 was denoted for calculating surface area and d=3 for volume of the k-balls inscribed in the prism. The formula for surface area or volume of the k-ball inscribed in the shape of a pyramid with a regular n-sided polygon base is E[pi()][(kP/n cotA)^f](1-B^kf) When B= [(4k^2+1)^1/2-1)/((4k^2+1)^1/2+1)] and E is a constant denoted for finding surface area or volume of the k-balls inscribed in the shape of the pyramid, E=1/(4k^2+1)^1/2 for calculation of surface area and E=1/[6(3k^2+1)] for calculation of volume. The exponent f is a constant for calculating surface area or volume of the k-balls inscribed in the shape of the pyramid. We denoted f=2 and f=3 for calculating surface area and volume of the k-balls inscribed in the pyramid respectively.

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