

Formulas given on the exam

$$a^3 + b^3 = (a + b)(a^2 - ab + b^2)$$

$$\cos^2 x + \sin^2 x = 1$$

$$\cos^2 x - \sin^2 x = \cos 2x$$

$$2 \sin x \cos x = \sin 2x$$

$$\int \frac{du}{\sqrt{a^2 - u^2}} = \sin^{-1} \left(\frac{u}{a} \right) + C$$

$$\int \frac{du}{u\sqrt{u^2 - a^2}} = \frac{1}{a} \sec^{-1} \left| \frac{u}{a} \right| + C$$

$$\int \frac{du}{a^2 + u^2} = \frac{1}{a} \tan^{-1} \left(\frac{u}{a} \right) + C$$

The range of \sin^{-1} is $[-\pi/2, \pi/2]$.

The range of \cos^{-1} is $[0, \pi]$.

The range of \tan^{-1} is $(-\pi/2, \pi/2)$.

The range of \cot^{-1} is $(0, \pi)$.

The range of \sec^{-1} is $[0, \pi/2) \cup (\pi/2, \pi]$.

The range of \csc^{-1} is $[-\pi/2, 0) \cup (0, \pi/2]$.