

Math 105 TOPICS IN MATHEMATICS

SOLUTION FOR QUIZ – XII (05/01)

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[I] (8pts)

(1) $\sin 0 = 0,$

(5) $\cos \frac{\pi}{2} = 0.$

(2) $\sin \frac{\pi}{6} = \frac{1}{2}.$

(6) $\sin \frac{2\pi}{3} = \frac{\sqrt{3}}{2}.$

(3) $\cos \frac{\pi}{4} = \frac{1}{\sqrt{2}}.$

(7) $\sin \pi = 0.$

(4) $\sin \frac{\pi}{3} = \frac{\sqrt{3}}{2}.$

(8) $\cos (2\pi) = 1.$

[II] (2pts) $(\cos x)^2 + (\sin x)^2 = 1.$

[III] (4pts)

(1) $\sin (x + y) = (\sin x)(\cos y) + (\cos x)(\sin y).$

(2) $\cos (x + y) = (\cos x)(\cos y) - (\sin x)(\sin y).$

[IV] (4pts)

(1) $\int \cos x \, dx = \sin x + C.$ (2) $\int \sin x \, dx = -\cos x + C.$

[V] (4pts)

$$\cos x = 1 - \frac{1}{\boxed{2!}}x^2 + \frac{1}{\boxed{4!}}x^4 - \frac{1}{\boxed{6!}}x^6 + \frac{1}{\boxed{8!}}x^8 - \dots,$$

$$\sin x = \frac{1}{\boxed{1!}}x - \frac{1}{\boxed{3!}}x^3 + \frac{1}{\boxed{5!}}x^5 - \frac{1}{\boxed{7!}}x^7 + \dots.$$