

STUDY GUIDE FOR TEST 3

- Use a Riemann Sum to evaluate $\int_0^2 x^2 dx$. ~~by taking a limit~~ ans $\frac{8}{3}$
- Find LHS, RHS, TRAP, MID and SIMP For $\int_0^2 x^3 dx$, $n=4$
 $\frac{9}{4}$, $\frac{25}{4}$, $\frac{17}{4}$, $\frac{21}{8}$
- Find the area under $\sin 3x$ from 0 to $\frac{\pi}{4}$ $\frac{\sqrt{2}}{6} + \frac{1}{3}$
- Find the area under e^{-2x} from 0 to 2 $\frac{1}{2} - \frac{e^{-4}}{2}$
- Find the area under $f(x) = -x^2 + 16$ and above the x axis $-\frac{256}{3}$
- Use a substitution to find $\int_0^2 x e^{-x^2} dx$ $\frac{1}{2} - \frac{e^{-4}}{2}$
- Use a double angle formula to find $\int_0^{\pi/2} \sin^4 x dx$ Hint $\sin^4 x = (\sin^2 x)^2 = \left(\frac{1 - \cos 2x}{2}\right)^2$ $\frac{3\pi}{16}$
- Use a trig substitution to find $\int_0^1 \sqrt{4-x^2} dx$ $x = 2s$ $\frac{\sqrt{3}}{2} + \frac{\pi}{2}$
 $\sin \frac{\pi}{6} = \frac{1}{2}$
- Find the indefinite integral of $\int \left(x^2 + \frac{1}{3}\right) \sin(x^3 + x) dx$
- Fluffy is tossed upward at 32 ft/sec from a 240 ft high cliff. How long till Fluffy hits the ground? Acceleration (on earth) is 32 ft/sec. How high does Fluffy get before starting down? $\frac{256}{V}$