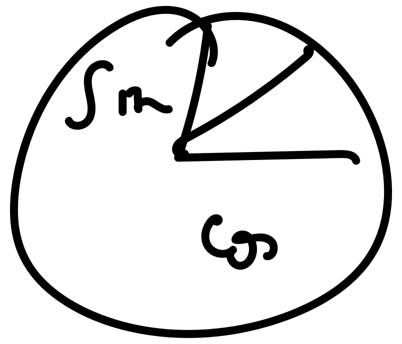
$$\int_1^2 \left(x^2 + \frac{1}{x^2}\right)dx \qquad \int = \frac{x^3}{3} + \left(-\frac{1}{x}\right) \qquad \frac{1}{x^2} = \frac{x^{-2}}{1} = \frac{x^{-1}}{-2+1} = \frac{x^{-1}}{-1} = -\frac{1}{x}$$

$$\left[\frac{x^3}{3} + \left(-\frac{1}{x}\right)\right]_1^2 = \overbrace{\left[\frac{8}{3} + \left(-\frac{1}{2}\right)\right]}^{2} - \overbrace{\left[\frac{1}{3} + \left(-\frac{1}{1}\right)\right]}^{1} = \left[\frac{8}{3} - \frac{1}{2}\right] - \left[\frac{1}{3} - 1\right] =$$

$$\left[\frac{16-3}{6}\right] + \frac{2}{3} = \frac{13}{6} + \frac{2}{3} = \frac{13+4}{6} = \frac{17}{6}$$

2P



$$\int_0^{\pi} \sin(2x)\,dx \qquad \int = -\frac{1}{2}\cos(2x)$$

$$\left[-\frac{1}{2}\cos(2x)\right]_0^{\pi} = \overbrace{\left[-\frac{1}{2}\cos(2\cdot 0)\right]}^{0} - \overbrace{\left[-\frac{1}{2}\cos(2\pi)\right]}^{\pi} = \left[-\frac{1}{2}\cdot 1\right] - \left[-\frac{1}{2}\cdot 1\right] =$$

2P

$$-\frac{1}{2} + \frac{1}{2} = 0$$

$(x^2+1)y' = 2x$, $\underset{x}{y(0)} = \underset{y}{3}$

$y' = \frac{2x}{x^2+1} \to y = \int \frac{2x}{x^2+1} = \ln|x^2+1| + C \to 3 = \ln|1| + C \to 3 = 0 + C \to 3 = C$

$\ln|x^2+1| + 3$

2, 5P