

MATH 107-253 Recitation 12

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p. 383 #5: Does

$$\int_1^{\infty} \frac{x}{x^2 + 2x + 4} dx$$

converge or diverge? Start by using “intuition analysis” to guess whether it converges or diverges and then use the comparison rule to show your guess is correct.

p. 384 #20: Does

$$\int_1^{\infty} \frac{1}{\sqrt{\theta^3 + \theta}} d\theta$$

converge or diverge? Start by using “intuition analysis” to guess whether it converges or diverges and then use the comparison rule to show your guess is correct.

p. 389 #7: Write a Riemann sum and then a definite integral representing the area between the curves $y = x$ and $y = \sqrt{x}$ using horizontal strips of height Δy .

p. 389 #13: Write a Riemann sum and then a definite integral representing the volume of a hemisphere with diameter 10mm using horizontal strips of height Δy .

p. 389 #21: Consider

$$\int_0^6 \pi \left(3 - \frac{y}{2}\right)^2 dy.$$

Is this the formula for the volume of a hemisphere or a cone? If a hemisphere, give its radius; if a cone, give its height. Sketch your solid and label all relevant quantities.
