

Math 112 Practice Exam 1 Solutions

1a) $\pi \int_0^{\frac{1}{2}} [(3-2y)^2 - (1+y)^2] dy$

1b) $2\pi \int_0^{\frac{1}{2}} y [2(1-y) - 2y] dy$

2) $2\pi \int_0^{R/2} x(\sqrt{R^2 - x^2} - \sqrt{3}x) dx$

3) $\frac{a^2}{2h^2} \int_0^h (y-h)^2 dy$

4) $\pi \int_{-\frac{1}{2}}^2 [(3x+7)^2 - (2x^2+5)^2] dy$

5) $\pi/3$

6) $\frac{1}{2} \arctan(2e^x) + C$

7) $\frac{1}{8} \ln |1 + 4e^{2x}| + C$

8) $(3\frac{4^3}{3/2} - 8\frac{4}{1/2}) - (3\frac{27}{3/2} - 8\frac{3}{1/2})$

9) $3 \ln |\ln(x^2 + 1)| + C$

10) $-\pi/6$

11) $\theta' = \frac{-2t/3}{\sqrt{1 - \left(\frac{2-t^2}{3}\right)^2}}$

12) $\sqrt{2}$

13) $\frac{3}{\sqrt{x^2 - 3^2}}$