

MATH 222 WORKSHEET 12 - ANSWERS

1. (a) $-x^2e^{-x} - 2xe^{-x} - 2e^{-x} + C$
(b) $\frac{\pi}{2}$
(c) $\ln|x| - \ln|x-1| - \frac{1}{x-1} + C$
(d) $x^2 + \ln|x+1| + \ln|x+3| + C$
(e) $\frac{2}{3}x^{3/2}\ln x - \frac{4}{9}x^{3/2} + C$
(f) $\frac{x}{9(4x^2+9)^{3/2}} + C$
(g) $\arcsin\left(\frac{x-2}{2}\right) + C$
2. (a) $I_n = x^n e^x - nI_{n-1}$
(b) $A_1 = 1, A_2 = e - 2, A_3 = 6 - 2e, A_4 = 9e - 24.$
3. (a) Does not exist.
(b) Does not exist.
(c) $\frac{1}{2}$
(d) $\frac{3}{2}$
(e) $\frac{1}{2}$
4. (a) Exists.
(b) Exists.
(c) Does not exist.
(d) Exists.