Homework 5 Solutions

21st February 2005

9.

a) We integrate the pdf, set it equal to 1 and solve for d.

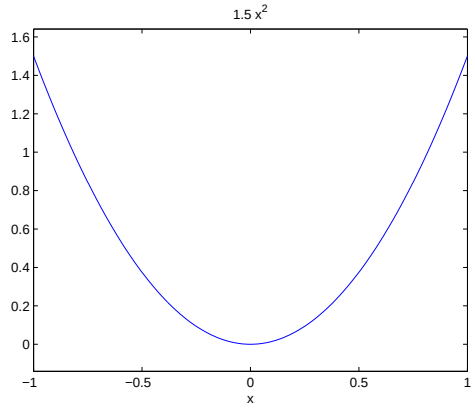
$\int \frac{d}{y^3} dy = -\frac{d}{2y^2} = 1$ Evaluate where function is defined (1, inf). $\frac{d}{2} = 1$ so d=2

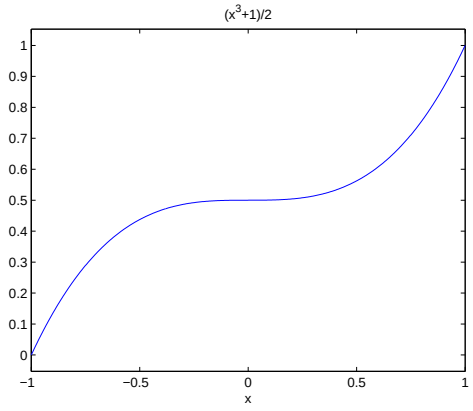
b) $E(Y) = \int \frac{2y}{y^3} dy = \frac{-2}{y^2} = 2$

c)Look at $E(Y^2) = \int \frac{2y^2}{y^3} dy = 2 * ln(y)$. Natural log is unbounded when y approaches infinity.

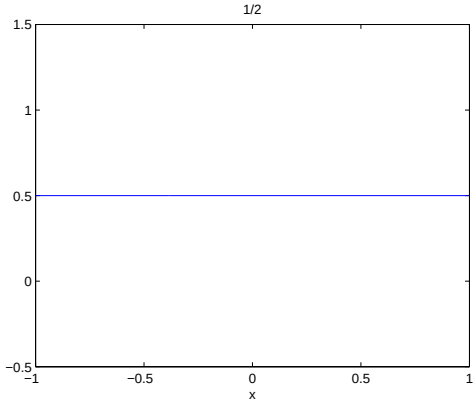
10. To find the distribution functions integrate the pdfs and make sure that F(left endpoint)=0 and F(right end point)=1. The pdfs are on the left and the cdfs are on the right

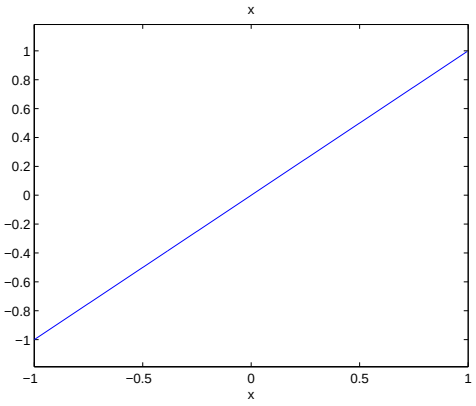
a) $F(x) = \frac{x^3+1}{2}$ for $-1 \leq x \leq 1$



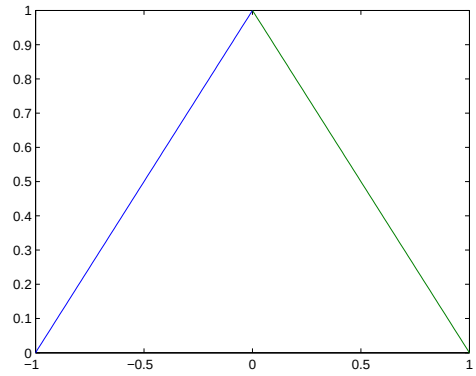


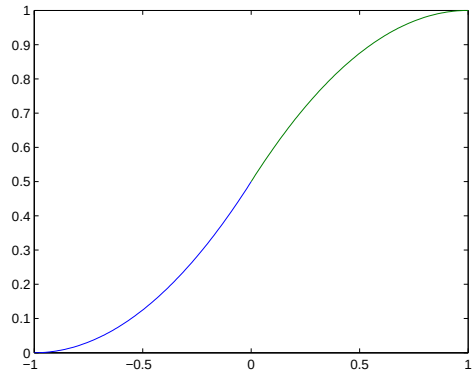
b)$F(x) = \frac{x+1}{2}$ for $-1 \leq x \leq 1$





c)$F(x) = \frac{(x+1)^2}{2}$ for $-1 \leq x \leq 0$ $F(x) = 1 - \frac{(1-x)^2}{2}$ for $0 < x \leq 1$





18) First find F(x). Intergrate f(x) and find C. $F(x) = \frac{(x+1)^2}{4}$ in reduced form.

a) $F(\pi_{.64}) = \frac{(\pi_{.64}+1)^2}{4} = .64$
$\pi_{.64} + 1 = \sqrt{.64 * 4}$
$\pi_{.64} = .6$

b) $F(\pi_{.25}) = \frac{(\pi_{.25}+1)^2}{4} = .25$
$\pi_{.25} = 0$

c)$F(\pi_{.81}) = \frac{(\pi_{.81}+1)^2}{4} = .81$
$\pi_{.81} = .8$