

This exam is due on Monday November 27 at 10:45 in class

2. Consider the following pdf's:

i.

a.  $f_X(x) = Cx^2$  for  $-1 < x < 1$ .

b.  $f(x) = C(1-x)^2$  for  $0 < x < 1$ .

c.  $f(x) = C / (3+x)^4$  for  $x > 0$

d.  $f(x) = Cx^2 \exp[-(x/7)^3]$  for  $x > 0$

e.  $f(x) = C \exp[-x^2/10]$  for  $-\infty < x < \infty$

i Identify the distribution and precise parameters of each of the pdf's b.- e. Provide the constant C for all pdf's a. - e.

ii Using the distributions you recognized in part i **when possible**, find the means and variances of the 5 distributions in part i. **Make sure the correspondence between the cases a-e and the means and variances you provide is very clear.**

iv. Consider case 2.a above. First **derive the CDF of X** and then **derive the distribution of  $Y=X^2$**  using the CDF method; then **identify the distribution of Y and its parameters.**