Table 1	p_i^2	$p_i \ln p_i$
GG	0.049	−0.334
GBB	0.034	−0.312
LBB	0.0014	−0.122
SBB	0.012	−0.244
RBB	0.198	−0.360

Table 2

D = 4.163

H = 1.502

$$D = \frac{1}{0.049 + 0.034 + 0.0014 + 0.012 + 0.198} = 3.3967$$

$$H = -(0.334 + 0.312 + 0.122 + 0.244 + 0.360) = 1.377$$

Expected Value of a dice.

$$= 1\left(\frac{1}{6}\right) + 2\left(\frac{1}{6}\right) + 3\left(\frac{1}{6}\right) + 4\left(\frac{1}{6}\right) + 5\left(\frac{1}{6}\right) + 6\left(\frac{1}{6}\right)$$

$$= \frac{21}{6} = 3 + \frac{1}{2}.$$

$$E(X) = \sum X_i \, p_i$$

p216 #41

f $\ln x - \ln(x-1) = \frac{1}{2}$

$$\ln\left(\frac{x}{x-1}\right) = \frac{1}{2}$$

$$e^{\ln\left(\frac{x}{x-1}\right)} = e^{0.5}$$

$$\frac{x}{x-1} = e^{0.5}$$

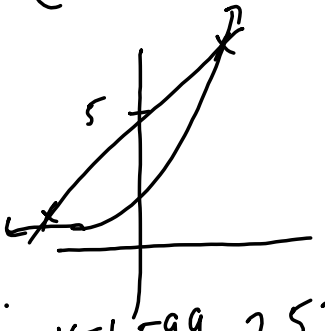
$$x = xe^{0.5} - e^{0.5}$$

$$x - xe^{0.5} = -e^{0.5}$$

$$x(1-e^{0.5}) = -e^{0.5}$$

$$x = \frac{-e^{0.5}}{1-e^{0.5}}$$

g $e^x = 3x+5$



Choice 1

$y_1 = e^x$

$y_2 = 3x+5$ 2nd trace. 5

$x = -1.599, 2.533$

Choice 2

$e^x = 3x+5$

$e^x - 3x - 5 = 0$

set $y_1 = e^x - 3x - 5$

look for x-intercepts (zeroes)

42. a $\frac{3^x}{5^{x-1}} = 2^{x-1}$

$3^x = 2^{x-1} \cdot 5^{x-1} = 10^{x-1}$

$\log 3^x = \log 10^{x-1}$

$x \log 3 = x - 1$ $\quad \log_b(b^x) = x$

$x \log 3 - x = -1$

$x(\log 3 - 1) = -1$

$x = \frac{-1}{\log 3 - 1}$

b $-3 + e^{x+1} = 2 + e^{x-2}$

$e^{x+1} = 5 + e^{x-2}$ $\quad \ln\left(\frac{A}{B}\right) = \ln A - \ln B$

$\ln(A \cdot B) = \ln(A) + \ln B$

c $\ln(2x-2) - \ln(x-1) = \ln x$

$\ln\left(\frac{2x-2}{x-1}\right) = \ln x$

$\ln 2 = \ln x$

$2 = x$

d $9^x - 7(3^x) = -6$

$3^{2x} - 7(3^x) + 6 = 0$

like $u^2 - 7u + 6 = 0$ where $u = 3^x$

$(u-6)(u-1) = 0$

$u = 6, 1$

$3^x = 6$ or $3^x = 1$

$x \ln 3 = \ln 6$ $\quad x \ln 3 = \ln 1$

$x = \frac{\ln 6}{\ln 3}$ $\quad x = 0$