Further hypothesis tests 6C

1 a 2.34

b 3.36

c 3.37

2 a $\frac{1}{F_{8,6}} = 0.241$

b $\frac{1}{F_{12,25}} = 0.463$

c $\frac{1}{F_{5,5}} = 0.198$

3 a 3.37

b 4.20

c 6.06

4 a $\frac{1}{F_{12,3}} = 0.0370$

b $\frac{1}{F_{12,8}} = 0.176$

c $\frac{1}{F_{12,5}} = 0.101$

5 a $3.07, \frac{1}{F_{10,8}} = 0.299$

b $2.91, \frac{1}{F_{10,12}} = 0.364$

c $5.41, \frac{1}{F_{5,3}} 0.111$

6 $\mathrm{P}(X < 0.5) = \mathrm{P}(F_{40,12} < 0.5)$

$= \mathrm{P}\left(F_{12,40} > \frac{1}{0.5}\right)$

$= P(F_{12,40} > 2)$

From the tables $F_{12,40}(0.05) = 2$

$\therefore \mathrm{P}(F_{12,40} > 2) = P(F_{40,12} < 0.5) = 0.05$

7 $\mathrm{P}(X < 3.28) = 1 - \mathrm{P}(F_{12,8} > 3.28)$

$= 1 - 0.05 = 0.95$

$\mathrm{P}\left(X < \frac{1}{2.85}\right) = \mathrm{P}\left(F_{12,8} < \frac{1}{2.85}\right)$

$= \mathrm{P}(F_{8,12} > 2.85)$

$\therefore \mathrm{P}\left(X < \frac{1}{2.85}\right) = 0.05$

$\mathrm{P}\left(\frac{1}{2.85} < X < 3.28\right) = \mathrm{P}(X < 3.28) - \mathrm{P}\left(X < \frac{1}{2.85}\right)$

$= 0.95 - 0.05$

$= 0.90$

8 $\mathrm{P}(X < 9.55) = 1 - \mathrm{P}(F_{2,7} > 9.55)$

$= 1 - 0.01$

$= 0.99$

9 a $\mathrm{P}(X < 3.00) = 1 - \mathrm{P}(F_{6,12} > 3.00)$

$= 1 - 0.05 = 0.95$

$\mathrm{P}(X > 0.25) = \mathrm{P}\left(F_{12,6} > \frac{1}{0.25}\right)$

$= \mathrm{P}(F_{12,6} > 4)$

$= 0.05$

$\mathrm{P}(0.25 < X < 3) = 0.95 - 0.05$

$= 0.90$

b ${}^{6}C_{2}(0.9)^{2}(0.1)^{4} \times 0.9 = 0.00109$