Let's see if the correlation between hours of sleep and caffeine consumption differs by gender. From our class, the correlation between hours of sleep and caffeine consumption for the 122 women in this class is -0.13. For the 29 men, the correlation it is -0.15. Is this difference between correlations significant? We'll use $\alpha = 0.05$.

**Women:** $n_1 = 122$, $r_1 = -0.13$

**Men:** $n_2 = 29$, $r_2 = -0.15$

$\alpha = 0.05$, two-tailed.

Fisher's $z_1'$ for $r_1 = -0.13$ is $-0.131$

$z_2'$ for $r_2 = -0.15$ is $-0.151$

$$
\sigma \frac{z_1' - z_2'}{z_1' - z_2'} = \sqrt{\frac{1}{n_1 - 3} + \frac{1}{n_2 - 3}} = \sqrt{\frac{1}{122 - 3} + \frac{1}{29 - 3}} = 0.2165
$$

$$z = \frac{z_1' - z_2'}{\sigma} = \frac{-0.131 - (-0.151)}{0.2165} = 0.923
$$

Area above $z = 0.923$ is 0.4641

Two-tailed test, so double it: $p = 0.4641 \times 2 = 0.9282$

Fail to reject $H_0$.

The correlation between hours of sleep and caffeine consumption for women ($r = -0.13$) is **not** significantly different than for the men ($r = -0.15$), $z = 0.923$, $p = 0.9282$.