$$\frac{\overline{X} - \mu}{\sigma / \sqrt{n}} \sim N(0,1)$$

$$\frac{\overline{X} - \mu}{S / \sqrt{n}} \sim t_{n-1}$$

$$\frac{\overline{X_D} - \mu_D}{S_D / \sqrt{n}} \sim t_{n-1}$$

$$\frac{\overline{X_1} - \overline{X_2} - (\mu_1 - \mu_2)}{S_p \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} \sim t_{n_1 + n_2 - 2} \qquad \text{where } S_p^2 = \frac{S_1^2(n_1 - 1) + S_2^2(n_2 - 1)}{n_1 + n_2 - 2}$$

$$\frac{\overline{X_1} - \overline{X_2} - (\mu_1 - \mu_2)}{\sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}} \sim N(0,1)$$

$$\frac{\overline{X_1} - \overline{X_2} - (\mu_1 - \mu_2)}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}} \sim t_v \qquad \text{where } v = \frac{(S_1^2/n_1 + S_2^2/n_2)^2}{(S_1^2/n_1)^2/(n_1 - 1) + (S_2^2/n_2)^2/(n_2 - 1)}$$

$$\frac{(n-1)S^2}{\sigma^2} \sim \chi_{n-1}^2$$

$$\frac{S_1^2 \sigma_2^2}{S_2^2 \sigma_1^2} \sim f_{n_1 - 1, n_2 - 1}$$

$$\frac{S_2^2 \sigma_1^2}{S_1^2 \sigma_2^2} \sim f_{n_2 - 1, n_1 - 1}$$