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Qualification Regulations

1. $\int_{-1}^1 \frac{1}{\sqrt{1-x^2}} dx$ (F# 601 603, T 671, K 472)

$\int_{-1}^1 \frac{1}{\sqrt{1-x^2}} dx = \int_{-1}^1 \frac{1}{\sqrt{1-x^2}} dx = \arcsin x \Big|_{-1}^1 = \arcsin 1 - \arcsin(-1) = \frac{\pi}{2} - (-\frac{\pi}{2}) = \pi$

2. $\int_0^1 x^2 e^x dx$ (F# 695)

$\int_0^1 x^2 e^x dx = \int_0^1 x^2 e^x dx = x^2 e^x - 2 \int_0^1 x e^x dx = x^2 e^x - 2(x e^x - \int_0^1 e^x dx) = x^2 e^x - 2x e^x + 2e^x \Big|_0^1 = (1 - 2 + 2)e^1 - (0 - 0 + 2)e^0 = e - 2$

3. $\int_0^1 x^2 dx$
- (1) $\int_0^1 x^2 dx = \frac{x^3}{3} \Big|_0^1 = \frac{1}{3}$
 - (2) $\int_0^1 x^2 dx = \frac{x^3}{3} \Big|_0^1 = \frac{1}{3}$
 - (3) $\int_0^1 x^2 dx = \frac{x^3}{3} \Big|_0^1 = \frac{1}{3}$
4. $\int_0^1 x^2 dx = \frac{x^3}{3} \Big|_0^1 = \frac{1}{3}$ (A# 1 80, T 4, K 80 862)

Qualification Regulations
