

Subject: Gamma Function Date:

$$I_6 = \int_0^1 x^2 e^{-(x-3)^2} dx$$

$$x - 3 = y$$
$$dx = dy$$

$$x = 0 \rightarrow y = -3$$

$$x = 1 \rightarrow y = -2$$

$$I_6 = \int_{-3}^{-2} (y+3)^2 e^{-y^2} dy$$

$$y^2 = z \rightarrow dz = \frac{1}{2\sqrt{z}} dz$$

$$y = -3 \rightarrow z = 9$$

$$y = -2 \rightarrow z = 4$$

$$I_6 = \int_9^4 (z + 6\sqrt{z} + 9) e^{-z} dz$$

