$$1 - \frac{4}{a\sqrt{\pi}} \int_0^{\sqrt{3}} a y^2 \exp(-y^2)\, dy$$

$$= 1 - \frac{4}{\sqrt{\pi}} \int_0^{\beta\sqrt{3}} y^2 \exp(-y^2)\, dy.$$

4/5 which is the required form, with $\alpha = -\frac{4}{\sqrt{\pi}}$ and $\beta = \sqrt{3}$.

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5) If $b = 2a$ the energy levels are given by $\frac{\hbar^2}{8m}\left(\frac{n_x^2}{a^2} + \frac{n_y^2}{4a^2}\right) = \frac{\hbar^2}{32ma^2}(4n_x^2 + n_y^2)$

We can write $4n_x^2 + n_y^2$ as entries in a table,

n_y \ n_x	1	2	3	4	5	6	7	8
1	5	17	37	65	101	145	-	-
2	8	20	40	68	104	148	-	-
3	13	25	45	73	109	153	-	-
4	20	32	52	80	116	160	-	-
5	29	41	61	89	125	169	-	-
6								
7								
8								
9								

From the table we see that the energy corresponding to $4n_x^2 + n_y^2 = 20$ is satisfied by two states:

1) $n_x = 2$, $n_y = 2$
2) $n_x = 1$, $n_y = 4$

The table shows us that the system has no lower degenerate energy.

5/6 This is a symmetry degeneracy; there will be a 'degenerate sequence', $n_{1kx} = 2k$, $n_{1ky} = 2k$

$$n_{2kx} = k, \quad n_{2ky} = 4k$$

Similar subsequences will be found for higher degenerate energies.

see back of p. 8. (opposite)