x^2+4x+3

$= \underline{x^2+4x+(2)^2} - 4 + 3$

$= (x+2)^2 - 1$

$$\int_4^\infty \frac{dx}{x^{3/4} - x^{1/2} - 1}$$

Evaluate? Really?

Nah. But you can see it doesn't converge.

Doesn't, because $x^{3/4}$ & $3/4 < 1$

Looking at old test 2:

http://www.harryzaims.com/202/202-fall-15/old-tests/01-older-tests/test-2.pdf

j, d, a look a bit much.

a: cut that x^2 down to an x & it's good.

$$\int e^x \sin x\, dx = -e^x \cos x - \int (-\cos x)\, e^x dx$$

$u = e^x \quad dv = \sin x\, dx$

$du = e^x dx \quad v = -\cos x$

$u = e^x \quad dv = -\cos x\, dx$

$du = e^x dx \quad v = -\sin x$

$$= -e^x \cos x - \left[(-e^x \sin x) - \int -e^x \sin x\, dx \right]$$

$$\int e^x \sin x\, dx = -e^x \cos x + e^x \sin x - \underbrace{\int e^x \sin x\, dx}_{\text{where we started!}}$$

$$\Longrightarrow\; 2\int e^x \sin x\, dx = -e^x \cos x + e^x \sin x$$

$$\Longrightarrow\; \int e^x \sin x\, dx = \frac{-e^x \cos x + e^x \sin x}{2}$$