Improper Integrals which Appear in STAT 511 and STAT 516

Rhino Participation Bonus (+1)
In STAT 511 and STAT 516, the following integrals are found analytically.
Use integration by parts to find the antiderivatives. Complete each box.
Both expressions will involve the parameter a. Show correct work for credit using correct limit notation.

$u = $ [   ] $dv = $ [   ]

(+.5)   1. $\int_0^\infty axe^{-ax}dx = $ [   ]

$du = $ [   ] $v = $ [   ]

$u = $ [   ] $dv = $ [   ]

(+.5)   2. $\int_0^\infty ax^2e^{-ax}dx = $ [   ]

$du = $ [   ] $v = $ [   ]