Alternate method
Using u-substitution

#1 from worksheet

$\int_{-1}^{0} \frac{8x}{(4x^2+1)^2}\,dx$; $u = 4x^2+1$

$du = 8x\,dx$

sub upper & lower boundary values into u

$u = 4(0)^2 + 1 = 1$

$u = 4(-1)^2 + 1 = 5$

change interval

$\int_5^1 u^{-2}\,du$

$\left[\frac{u^{-1}}{-1}\right]_5^1$

or

$\left[-\frac{1}{u}\right]_5^1$

* Note: new values do not always go least to greatest

Substitution here is easier than w/o using u-sub

$-\frac{1}{1} - \left(-\frac{1}{5}\right)$

$-1 + \frac{1}{5}$

$-\frac{4}{5}$

Note: #1-4 don't ask to evaluate but if you choose to evaluate, answers are

1) $-\frac{4}{5}$ (as shown)
2) -20
3) 27
4) $\frac{3}{8}$