2.72
4

(e) $\int_{-5}^{-4} \frac{(x+2)^2}{x+3}\,dx = \int_{-5}^{-4} \frac{x^2+4x+4}{x+3}\,dx = \int_{-5}^{-4} \frac{(x+3)(x+1)+1}{x+3}\,dx = \int_{-5}^{-4} \left(x+1+\frac{1}{x+3}\right)dx =$

$= \frac{x^2}{2} + x + \ln|x+3| \Big|_{-5}^{-4} = \left(\frac{16}{2} - 4 + \ln 1\right) - \left(\frac{25}{2} - 5 + \ln 2\right) = -3\frac{1}{2} - \ln 2$

(d) $\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \cos 3x \sin 5x\,dx = \frac{1}{2}\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} (\sin 8x + \sin 2x)\,dx = 0$