(a) Use the technique of integration by parts to find the following indefinite integral
\[ \int x \cos x \, dx. \]

Let \( u = x \) and \( dv = \cos x \, dx \) so that \( du = dx \) and \( v = \sin x. \) Then,
\[
\int x \cos x \, dx \overset{\text{IBP}}{=} x \sin x - \int \sin x \, dx \\
= x \sin x - (-\cos x) + C \\
= x \sin x + \cos x + C.
\]

(b) Use the technique of partial fractions to find the following indefinite integral.
\[ \int \frac{5x + 3}{x^2 - 2x - 3} \, dx. \]

Since \( x^2 - 2x - 3 = (x - 3)(x + 1), \) it follows that we can write
\[
\frac{5x + 3}{x^2 - 2x - 3} \equiv \frac{A}{x - 3} + \frac{B}{x + 1}
\]
or
\[ 5x + 3 \equiv A(x + 1) + B(x - 3). \]

At \( x = 3, \) we have \( 18 = A(4) \) or \( A = \frac{9}{2}. \) At \( x = -1, \) we have \( -2 = B(-4) \) or \( B = \frac{1}{2}. \) It follows that
\[
\int \frac{5x + 3}{x^2 - 2x - 3} \, dx = \int \frac{A}{x - 3} \, dx + \int \frac{B}{x + 1} \, dx \\
= \frac{9}{2} \int \frac{dx}{x - 3} + \frac{1}{2} \int \frac{dx}{x + 1} \\
= \frac{9}{2} \ln |x - 3| + \frac{1}{2} \ln |x + 1| + C.
\]