Stewart Section 7-4 Partial Fractions Homework Hints:

#8 Use polynomial long division to rewrite original rational function:

$$t+1 \enclose{longdiv}{\begin{array}{rr} 3 \\ 3t & -2 \end{array}}$$

$$\underline{-(3t \quad +3)}$$

$$-5$$

$$\frac{3t-2}{t+1} = 3 - \frac{5}{t+1}$$

$$\int \frac{3t-2}{t+1}\,dx = \int 3 - \frac{5}{t+1}\,dx$$

#9

$$\frac{5x+1}{(2x+1)(x-1)} \rightarrow \frac{A}{2x+1} + \frac{B}{x-1}$$

$$\frac{5x+1}{(2x+1)(x-1)} = \frac{1}{2x+1} + \frac{2}{x-1}$$

#11
Factor the denominator:

$$2x^2 + 3x + 1 = (2x+1)(x+1)$$

$$\frac{2}{2x^2+3x+1} = \frac{2}{(2x+1)(x+1)}$$

$$\frac{2}{(2x+1)(x+1)} \rightarrow \frac{A}{2x+1} + \frac{B}{x-1}$$

$$\frac{2}{(2x+1)(x+1)} = \frac{4}{2x+1} + \frac{2}{x+1}$$

#20

$$\frac{x^2-5x+16}{(2x+1)(x-2)^2} \rightarrow \frac{A}{2x+1} + \frac{B}{x-2} + \frac{C}{(x-2)^2}$$

$$\frac{x^2-5x+16}{(2x+1)(x-2)^2} = \frac{3}{2x+1} - \frac{1}{x-2} + \frac{2}{(x-2)^2}$$

#26

$$\frac{x^2+x+1}{(x^2+1)^2} \rightarrow \frac{Ax+B}{x^2+1} + \frac{Cx+D}{(x^2+1)^2}$$

$$\frac{x^2+x+1}{(x^2+1)^2} = \frac{1}{x^2+1} + \frac{x}{(x^2+1)^2}$$