

9) $\int -\sec x - \tan x \, dx$

$= -\sec x + C$

15) $\int (3x-2)^3 \, dx$

$u = 3x-2$
 $\frac{du}{dx} = \frac{3dx}{3}$
 $dx = \frac{du}{3}$
 $u+2 = 3x$
 $x = \frac{u+2}{3}$

$\frac{1}{3} \int u^3 \left[\frac{u+2}{3} \right] du$
 $= \frac{1}{9} \int u^3 (u+2) du = \frac{1}{9} \int (u^4 + 2u^3) du$
 $= \frac{1}{9} \left[\frac{u^5}{5} + \frac{2u^4}{4} \right] = \frac{u^5}{45} + \frac{u^4}{18} + C$
 $= \frac{(3x-2)^5}{45} + \frac{(3x-2)^4}{18} + C$

16) $\int (4x+5)^3 \, dx = \int (4x+5)^3 x \, dx$

$u = 4x+5 \rightarrow u-5 = 4x$
 $\frac{du}{dx} = \frac{4dx}{4}$
 $dx = \frac{du}{4}$
 $x = \frac{u-5}{4}$

$\frac{3}{4} \int u^3 \left[\frac{u-5}{4} \right] du = \frac{3}{16} \int (u^4 - 5u^3) du$
 $= \frac{3}{16} \left[\frac{u^5}{5} - \frac{5u^4}{4} \right] = \frac{3u^5}{80} - \frac{5u^4}{32} + C$
 $= \frac{3(4x+5)^5}{80} - \frac{5(4x+5)^4}{32} + C$

11) $\int (x^4 + 2) \cdot 4x^3 \, dx$

$u = x^4 + 2$
 $du = 4x^3 dx$
 $\int u^3 du = \frac{u^4}{4} = \frac{(x^4 + 2)^4}{4} + C$

18) $\int \csc(x^5 - 5) \cdot \cot(x^5 - 5) \, dx$

$u = x^5 - 5$
 $5 \cdot du = 5x^4 dx$
 $\int \csc u \cot u \, du = -\csc u + C$
 $= -\csc(x^5 - 5) + C$

29) $\int_1^3 (x^4 - 4x^3 + 3x^2 + 2x - 3) \, dx$

$\frac{x^5}{5} - \frac{4x^4}{4} + \frac{3x^3}{3} + \frac{2x^2}{2} - 3x \Big|_1^3$
 $\frac{243}{5} - \frac{243}{1} + \frac{27}{1} + \frac{18}{1} - 9$
 $\frac{243}{5} - 243 + 27 + 18 - 9 = \frac{243}{5} - 207$
 $\frac{243}{5} - \frac{1035}{5} = -\frac{792}{5}$

$\frac{-x^4}{4} + \frac{x^3}{3} + 4x$
 $f(2) = \frac{-(2^4)}{4} + \frac{2^3}{3} + 4(2) = -4 + \frac{8}{3} + 8 = 4\frac{2}{3}$
 $f(-1) = \frac{-(-1)^4}{4} + \frac{(-1)^3}{3} + 4(-1) = -\frac{1}{4} - \frac{1}{3} - 4 = -4\frac{13}{12}$
 $10 \frac{243}{12} = 11\frac{1}{4} = 11.25$