MATH 2 SOLUTIONS PROBLEM SET # 3

SECTION 4.9

(2.) $f(x) = \frac{1}{2}x^2 - 2x + 6$

$F(x) = \boxed{\frac{1}{6}x^3 - x^2 + 6x + C}$

(6.) $f(x) = x(2-x)^2 = x^3 - 4x^2 + 4x$

$F(x) = \boxed{\frac{1}{4}x^4 - \frac{4}{3}x^3 + 2x^2 + C}$

(14.) $f(x) = 3e^x + 7\sec^2 x$

$F(x) = \boxed{3e^x + 7\tan x + C}$

(18.) $f(x) = 2\sqrt{x} + 6\cos x = 2x^{\frac{1}{2}} + 6\cos x$

$F(x) = \boxed{\frac{4}{3}x^{3/2} + 6\sin x + C}$

(26.) $f''(x) = 6x + \sin x$

$f'(x) = 3x^2 - \cos x + C$

$f(x) = \boxed{x^3 - \sin x + Cx + D}$

(46.) $f'''(x) = \cos x$, $f(0) = 1$, $f'(0) = 2$, $f''(0) = 3$

$f''(x) = \sin x + C_1 \qquad f''(0) = 3 \Rightarrow C_1 = 3$

$f''(x) = \sin x + 3$

$f'(x) = -\cos x + 3x + C_2 \qquad f'(0) = 2 \Rightarrow C_2 = 3$

$f'(x) = -\cos x + 3x + 3$

$f(x) = -\sin x + \frac{3}{2}x^2 + 3x + C_3 \qquad f(0) = 1 \Rightarrow C_3 = 1$

$f(x) = \boxed{-\sin x + \frac{3}{2}x^2 + 3x + 1}.$

(OVER) ↗

(CONT'D)

(58.) $v(t) = 1.5\sqrt{t} = \frac{3}{2}t^{\frac{1}{2}}$, $s(4) = 10$.

$s(t) = t^{3/2} + C$ $\quad s(4) = 10 \Rightarrow 8 + C = 10 \Rightarrow C = 2$

$s(t) = \boxed{t^{3/2} + 2}$.