

3)  $f(x) = \frac{1}{2} + \frac{3}{4}x^2 - \frac{4}{5}x^3$   
 $\int f(x)dx = \frac{1}{2}x + \frac{3}{4} \cdot \frac{x^3}{3} - \frac{4}{5} \cdot \frac{x^4}{4} + C$   
 $= \frac{1}{2}x + \frac{1}{4}x^3 - \frac{1}{5}x^4 + C$

5)  $f(x) = 2x^2 + x - 1$   
 $\int f(x)dx = 2 \cdot \frac{x^3}{3} + \frac{x^2}{2} - x + C$

10)  $f(x) = e^2$   $\int f(x)dx = e^2 x + C$

13)  $f(x) = \frac{1}{5} - 2 \frac{1}{x}$   $x \neq 0$   $x \in (-\infty, 0) \cup (0, \infty)$   
 $\int f(x)dx = \frac{1}{5}x - 2 \ln|x| + C$   

$$F(x) = \begin{cases} \frac{1}{5}x - 2 \ln|x| + C_1 & x < 0 \\ \frac{1}{5}x - 2 \ln|x| + C_2 & x > 0 \end{cases}$$

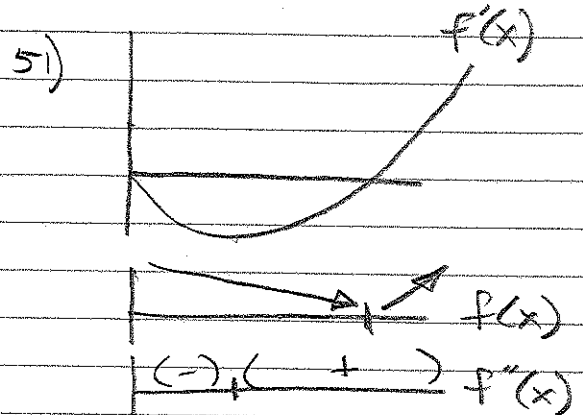
20)  $f(x) = 2x^{1/2} + 6 \cos(x)$   
 $\int f(x)dx = 2 \left( \frac{x^{3/2}}{3/2} \right) + 6 \sin(x) + C$

23)  $F(x) = \int f(x)dx = \int (5x^4 - 2x^5)dx$   
 $= 5 \frac{x^5}{5} - 2 \frac{x^6}{6} + C$   
 $F(0) = 4 = 0 - 0 + C$   
 $F(x) = x^5 - \left(\frac{1}{3}\right)x^6 + 4$

25)  $f''(x) = 20x^3 - 12x^2 + 6x$   
 $f'(x) = 20 \frac{x^4}{4} - 12 \frac{x^3}{3} + 6 \frac{x^2}{2} + C$   
 $f(x) = 5 \frac{x^5}{5} - 4 \frac{x^4}{4} + 3 \frac{x^3}{3} + Cx + D$   
 $f(x) = x^5 - x^4 + x^3 + Cx + D$   
 $f'(x) = 5x^4 - 4x^3 + 3x^2 + C$   
 $f''(x) = 20x^4 - 12x^2 + 6x$  ✓

41)  $f''(\theta) = \sin \theta + \cos \theta$   
 $f'(\theta) = -\cos \theta + \sin \theta + C$   
 $f(\theta) = -\sin \theta - \cos \theta + 5\theta + D$   
 $f(0) = 3 = 0 - 1 + 0 + D$   
 $D = 4$

$f(x) = -\sin \theta - \cos \theta + 5\theta + 4$



65)

$\int g dt = v(t)$   
 $\int v(t) dt = s(t)$

$v(t) = gt + C$   
 $s(t) = \frac{1}{2}gt^2 + Cx + D$   
 $s(0) = 450m = 0 + 0 + D$   
 $D = 450m$   
 $v(0) = 0, C = 0$   
 $d) \text{ or } -5, C = -5$

$s(t) = \frac{1}{2}gt^2 + 450m$   
 $\text{or } s(t) = \frac{1}{2}gt^2 - 5t + 450$

a)  $s(t) = \frac{-9.81}{2}t^2 + 450$

b)  $0 = \frac{-9.81}{2}t^2 + 450$   
 $t^2 = \frac{900m}{9.81m/s^2}$   
 $t = 9.6s$

c)  $v(9.6) = (-9.81m/s^2)(9.6s) = -93.96m/s$

d)  $0 = -9.81t^2 - 5t + 450$   $t = 9.09s$   $\sqrt{6.61} = 9.47$