(28) $\frac{d}{dx}(8x^{\frac{1}{4}} - 3x^{-3/2}) = -2x^{-\frac{5}{4}} + \frac{9}{2}x^{-\frac{5}{2}} = \boxed{\frac{-2}{\sqrt[4]{x^5}} + \frac{9}{2\sqrt{x^5}}}$

(29) $F'(x) = \frac{2}{3}x^3 - 3$

$F'(-2) = \frac{2}{3}(-8) - 3 = -\frac{16}{3} - \frac{9}{3} = \boxed{-\frac{25}{3}}$

(30) $F'(x) = \frac{1}{3}x^2 - 14x$

$F'(3) = 3 - 52 = \boxed{-49}$

Day 2 #31-45

(31) $\frac{dy}{dx} = 4x^3 - 15x^2$ $\quad y_{x=2} = 2^4 - 5(2^3) + 2 = 16 - 40 + 2 = -22$ $\quad (2, -22)$

$\frac{dy}{dx}@x=2 \rightarrow 4\cdot 8 - 15\cdot 4 = -28$ $\quad 32 - 60$

$y = -28x + b$

$-22 = (-28)(2) + b$

$-22 = -56 + b$

(34) $= b$

$\boxed{y = -28x + 34}$

(32) $y_1 = -3 - 8 + 4 = -7$ $\quad (1, -7)$

$\frac{dy}{dx} = -15x^4 - 24x^2 + 8x$

$\frac{dy}{dx}@x=1 = -15 - 24 + 8 = -31$

$y = -31x + b$

$-7 = (-31)(1) + b$

$-7 + 31 = b$

$24 = b$

$\boxed{y = -31x + 24}$

(33) $\frac{dy}{dx} = -x^{-1/2} + \frac{3}{2}x^{1/2}$

$\frac{dy}{dx} = \frac{-1}{\sqrt{x}} + \frac{3\sqrt{x}}{2}$ $\quad m = \frac{-1}{\sqrt{9}} + \frac{3\sqrt{9}}{2} = \frac{-1}{3} + \frac{9}{2} = \frac{-2}{6} + \frac{27}{6}$

$m = \frac{25}{6}$

(34) $\frac{dy}{dx} = 3x^{-4} - 2x^{-3}$

$\frac{dy}{dx} = \frac{3}{x^4} - \frac{2}{x^3}$ $\quad m = \frac{3}{2^4} - \frac{2}{(2^3)} = \frac{3}{16} - \frac{2}{8} = \boxed{\frac{-1}{16}}$

(35) $m = F'(x) = 18x - 8 = 0$

$x = \frac{8}{18} = \boxed{\frac{4}{9}}$

(36)

$F'(x) = m = -5 = 3x^2 + 18x + 19$

$0 = 3x^2 + 18x + 24 = 3(x^2 + 6x + 8)$

$= 3(x+4)(x+2)$ $\quad \boxed{x = -2, -4}$

(37) $F'(x) = 6x^2 + 18x - 60 = 0$

$= 6(x^2 + 3x - 10) = 0$

$6(x+5)(x-2) = 0$

$\boxed{x = -5 \quad x = 2}$

(38) $F'(x) = 3x^2 + 30x + 63 = 0$

$3(x^2 + 10x + 21) = 0$

$3(x+7)(x+3) = 0$

$\boxed{x = -7 \quad x = -3}$

(39) $f'(x) = 3x^2 - 8x - 7 = 0$

$x = \frac{8 \pm \sqrt{64 - 4(3)(-7)}}{6}$

$x = \frac{8 \pm \sqrt{64 + 84}}{6}$

$\boxed{\frac{8 \pm \sqrt{148}}{6}}$

(40) $f'(x) = 3x^2 - 10x + 6 = 0$

$x = \frac{10 \pm \sqrt{100 - 4(3)(6)}}{6} = \frac{10 \pm \sqrt{100 - 72}}{6}$

$\boxed{x = \frac{10 \pm \sqrt{28}}{6}}$

(41) $F'(x) = 12x + 4 = -2$

$\frac{12x}{12} = \frac{-6}{12}$

$\boxed{x = -\frac{1}{2}}$

(42) $F'(x) = 6x^2 - 18x - 12 = 12$

$6x^2 - 18x - 24 = 0$

$6(x^2 - 3x - 4) = 0$

$6(x - 4)(x + 1) = 0$

$\boxed{x = 4 \quad x = -1}$

(43) $F'(x) = 3x^2 + 12x + 21 = 9$

$3x^2 + 12x + 12 = 0$

$3(x^2 + 4x + 4) = 0$

$3(x + 2)(x + 2) = 0$

$\boxed{x = -2}$

(44) $F'(x) = 3g'(x) - 2h'(x) + 3$

$F'(5) = 3(g'(5)) - 2(h'(5)) + 3$

$= 3(13) - 2(-3) + 3$

$= 36 + 6 + 3$

$= \boxed{45}$

(45) $F'(x) = \frac{1}{2}(g'(x)) + \frac{1}{4}(h'(x))$

$F'(2) = \frac{1}{2}(g'(2)) + \frac{1}{4}(h'(2))$

$= \frac{1}{2}(7) + \frac{1}{4}(14) = \frac{7}{2} + \frac{7}{2} = \boxed{7}$