3-0235 — 50 SHEETS — 5 SQUARES
3-0236 — 100 SHEETS — 5 SQUARES
3-0237 — 200 SHEETS — 5 SQUARES
3-0137 — 200 SHEETS — FILLER
COMET

3) $f(x) = 186.5 \qquad f'(x) = \boxed{0}$

6) $f(x) = \frac{3}{4}x^8 \qquad f'(x) = 8 \cdot \frac{3}{4}x^7$

$= \boxed{6x^7}$

7) $f(x) = x^3 - 4x + 6 \qquad f'(x) = \boxed{3x^2 - 4}$

10) $h(x) = (x-2)(2x+3)$

$= 2x^2 - x - 6 \qquad h'(x) = \boxed{4x - 1}$

12) $y = 5e^x + 3 \qquad y' = \boxed{5e^x}$

15) $A(s) = -\frac{12}{s^5} = -12s^{-5} \qquad A'(s) = (-5) - 12s^{-6}$

$= \boxed{\frac{60}{s^6}}$

23) $y = \frac{x^2 + 4x + 3}{\sqrt{x}} = \frac{x^2}{\sqrt{x}} + \frac{4x}{\sqrt{x}} + \frac{3}{\sqrt{x}} = x^{3/2} + 4x^{1/2} + 3x^{-1/2}$

$y' = \frac{3}{2}x^{1/2} + 2x^{-1/2} - \frac{3}{2}x^{-3/2}$

$= \frac{3}{2}\sqrt{x} + \frac{2}{\sqrt{x}} - \frac{3}{2\sqrt{x^3}}$

$= \boxed{\frac{3x^2 + 4x - 3}{2x\sqrt{x}}}$

25) $y = 4\pi^2 \qquad \boxed{y' = 0}$

29) $u = \sqrt[5]{t} + 4\sqrt{t^5} = t^{1/5} + 4t^{5/2}$

$u' = \frac{1}{5}t^{-4/5} + 10t^{3/2}$

$= \boxed{\frac{1}{\sqrt[5]{t^4}} + 10t\sqrt{t}}$

31) $z = \frac{A}{y^{10}} + Be^y = \boxed{Ay^{-10} + Be^y}$

$z' = -10Ay^{-11} + Be^y$

$\boxed{= \frac{-10A}{y^{11}} + Be^y}$

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38) $y = x - \sqrt{x}$ $(1,0)$

$y' = 1 - \frac{1}{2}x^{-1/2}$

$y' = 1 - \frac{1}{2\sqrt{x}}$

slope at $(1,0) = 1 - \frac{1}{2\sqrt{1}} = \frac{1}{2}$

Tangent line at $(1,0)$: $y - y_1 = m(x - x_1)$

$y - 0 = \frac{1}{2}(x - 1)$

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

Graph: use calculator

52) $f(x) = x^3 + 3x^2 + x + 3$

The tangent line is horizontal when the slope is $\emptyset$.

These points can be found by setting the derivative of f equal to zero, and solving for x.

$f'(x) = 3x^2 + 6x + 1$

$3x^2 + 6x + 1 = 0$ $\quad x = \frac{-6 \pm \sqrt{36 - 12}}{6}$

$\boxed{x = -1 \pm \frac{1}{3}\sqrt{6}}$

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58) Where does normal line to parabola $y = x - x^2$ at point $(1,0)$ intersect the parabola a second time?

Slope of tangent line at $(1,0)$

$y' = 1 - 2x$

slope $= 1 - 2(1)$

$m = -1$

Slope of normal at $(1,0)$ is negative reciprocal of slope of tangent.

normal $= -\frac{1}{-1} = 1$

Equation of normal line at $(1,0)$

$y - y_1 = m(x - x_1)$

$y - 0 = 1(x - 1)$

$\boxed{y = x - 1}$

Find where normal intersects parabola by setting equations equal to one-another and solve for x.

$x - 1 = x - x^2$

$x^2 - 1 = 0$

$x = \pm 1$

$x = 1,\ y = 0 = (1,0)$

$x = -1,\ y = -2 = (-1,-2)$

$\therefore$ $\boxed{\text{second intersection is at } (-1,-2)}$