1. $y = 1 + x - x^2$ at the point (x_1, y_1)

$y = -x^2 + x + 1$

multiply through by -1

$y = x^2 - x - 1$

$m = \frac{dy}{dx} = 2x - 1$

$m = 2(-2) - 1$

$m = -5$

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

$y + 5 = -5(x + 2)$

$y + 5 = -5x - 10$

$y + 5 + 5x + 10 = 0$

$5x + y + 15 = 0$ (equation of the tangent)

of normal $m m_2 = -1$

$y - y = -\frac{1}{m}(x - x_1)$

$y + 5 = -\frac{1}{-5}(x + 2)$

$\frac{y+5}{1} = \frac{x+2}{5}$

$x + 2 = 5(y + 5)$

$x + 2 + 5y - 25 = 0$

$x - 5y - 23 = 0$ (equation of the normal)

5. of the normal.

$y - y_1 = -\frac{1}{m}(x - x_1)$

$y - \frac{1}{5} = -\frac{1}{-0.11}(x - 5)$

$\frac{y - \frac{1}{5}}{1} = \frac{x - 3}{0.11}$

$x - 3 = 0.11(y - \frac{1}{5})$

$x - 3 = 0.11y - 0.057$

$x - 0.11y - 2.96 = 0$

equation of the normal

4. $y = \frac{1}{x}$ at the point $(3, \frac{1}{5})$

$x_1 \quad y_1$

$y = x^{-1}$

$m = \frac{dy}{dx} = -x^{-2}$

$m = -(3)^{-2} = m = -0.11$

$y - y_1 = m(x - x_1) = y - \frac{1}{5} = -0.11(x - 5)$

$y - \frac{1}{5} = -0.11x + 0.55$

$y - \frac{1}{5} + 0.11x - 0.55 = 0$

$= 0.11x + y - 0.66 = 0$ (equation of the tangent)

$y - 8 = \frac{-x+2}{10}$

$-x + 2 = 10(y - 8)$

$-x + 2 - 10y + 80 = 0$

$10y + x - 82 = 0$ equ of the normal //

3. $y = x^3/2$ at the point $(-1, -1/2)$

$y = 3x^{-3}$

$m = \frac{dy}{dx} = -6x^{-4}$

$m = -6(-1)^{-4}$

$m = -6(1)$

$m = -6$

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

$y + 1/2 = -6(x+1)$

$y + 1/2 + 6x + 6 = 0$

$6x + 6y + 13/2 = 0$

multiply through by 2

$12x + 2y + 13 = 0$ equ of the tangent //

at the normal $m_1 m_2 = -1$

$y - y_1 = -1/m(x - x_1)$

$y + 1/2 = -1/6 (x+1)$

$\frac{y + 1/2}{1} = \frac{x+1}{6}$

$x + 1 = 6(y + 1/2)$

$x + 1 = 6y + 3$

$x + 1 - 6y - 3 = 0$

$x - 6y - 2 = 0$ (equ of the normal) //

1. $y = 2x^2$ at point $(1, 2)$

$x \quad y$

$m = \frac{dy}{dx} = 4x$

$m = 4(1)$

$m = 4$

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

$y - 2 = 4(x - 1)$

$y - 2 = 4x - 4$

$y - 2 - 4x + 4 = 0$

$y - 4x + 2 = 0$, (equation of the tangent)

at normal $m_1 m_2 = -1$

$y - y_1 = -1/m(x - x_1)$

$y - 2 = -1/4 \cdot (x - 1)$

$y - 2 = \frac{-x + 1}{4}$

$-x + 1 = 4(y - 2)$

$-x + 1 - 4y + 8 = 0$

$4y + x - 9 = 0$, (equation of the normal).

2. $y = 3x^2 - 2x$ at the point $(2, 8)$

$x_1 \quad y_1$

$m = \frac{dy}{dx} = 6x - 2$

$m = 6(2) - 2$

$= 12 - 2 = 10$

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

$y - 8 = 10(x - 2)$

$y - 8 - 10x + 20 = 0$

$y - 10x + 12 = 0$ (equation of the tangent).

at the normal $m_1 m_2 = -1$

$y - y_1 = -1/m(x - x_1)$

$y - 8 = -1/10(x - 2)$