$10y + x = 80 + 2$

$10y + x = 82$

$10y + x - 82 = 0$

3 $y = \frac{x^3}{2}$ $(-1, -1/2)$

$\frac{dy}{dx} = \frac{3x^2}{2}$

at $x = -1) \Rightarrow \frac{3(-1)^2}{2}$

$m = \frac{3}{2}$

$\frac{y+1}{2}$

at tanged

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

$y - (-1/2) = \frac{3}{2}(x - (-1))$

$y + \frac{1}{2} = \frac{3}{2}(x+1)$

$\frac{2y+1}{2} = \frac{3x+3}{2}$

$2(2y+1) = 2(3x+3)$

$4y + 2 = 6x + 3$

$4y - 6x = 3 - 2$

$4y - 6x = 1$

$4y - 6x - 1 = 0$

for normal

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

$y - (-1/2) = \frac{-1}{3/2}(x - (-1))$

$y + 1/2 = -\frac{2}{3}(x+1)$

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

$3(2y+1) = 2(-2x-2)$

$6y + 3 = -4x - 4$

$6y + 4x = -3 - 4$

$6y + 4x = -7$

~~$6y + 4x + 7 = 0$~~

$6y + 4x + 7 = 0$

$-x^2 + x + 1$
$-2x + 1$

1. $y = 1 + x - x^2 \quad (-2, -5)$

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

at $x = -2 \Rightarrow 1 - 2(-2)$

$= 1 - 4$

$m = -3$

at tangent

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

$y - (-5) = -3(x - (-2))$

$y + 5 = -3(x + 2)$

$y + 5 = -3x - 6$

$y + 3x = -5 - 6$

$y + 3x = -11$

$y + 3x + 11 = 0$

at normal

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

$y - (-5) = \frac{-1}{-3}(x - (-2))$

$y + 5 = \frac{1}{3}(x + 2)$

$3(y + 5) = 1(x + 2)$

$3y + 15 = x + 2$

$3y - x = -15 + 2$

$3y - x = -13$

$3y - x + 13 = 0$

5) $y = 1/x \quad (3, 1/3)$

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

at $x = 3, \; m = \frac{-1}{3^2} = \frac{-1}{9}$

$m = \frac{-1}{9}$

~~tat tangat~~ at tangent

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

$y - 1/3 = \frac{-1}{9}(x - 3)$

$\frac{3y - 1}{3} = \frac{-1}{9}(x -$

$\frac{3y - 1}{3} = \frac{-x + 3}{9}$

$9(3y - 1) = 3(-x + 3)$

$27y - 9 = -3x + 9$

$27y + 3x = 9 + 9$

$m_1 = \frac{1}{3}$

$8y + 3x = 18$

$24y + 9x - 18 = 0$

at normal

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

$\left(y - \frac{1}{3}\right) = \frac{-1}{-1/9}(x - 3)$

$y - \frac{1}{3} = 9(x - 3)$

$\frac{3y - 1}{3} = 9x - 27$

$3y - 1 = 27x - 81$

$3y - 27x = 1 - 81$

$3y - 27x = -80$

$3y - 27x + 80 = 0$

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19/MHS01/128

1 $y = 2x^2$

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

$\frac{dy}{dx}\Big|_{x=1} = 4(1)$

$\therefore m = 4$

For tangent

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

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

$y - 2 = 4x - 4$

$y - 4x = 2 - 4x$

$y - 4x = -2$

$y - 4x + 2 = 0$

For normal

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

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

$4y - 8 = -x + 1$

$4y + x = 8 + 1$

$4y + x = 9$

$4y + x - 9 = 0$

2) $y = 3x^2 - 2x \quad (2, 8)$

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

$\frac{dy}{dx}$ at $x = 2 \quad 6(2) - 2$

$m = 10$

For tangent

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

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

$y - 8 = 10x - 20$

$y - 10x = 8 - 20$

$y - 10x = -12$

$y - 10x + 12 = 0$

For normal

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

$y - 8 = \frac{-1}{10}(x - 2)$

$10y - 80 = -x + 2$