$m_2 = -1/-1/9$

$m_2 = 9$

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

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

$y - 1/3 = 9x - 27$

$3y - 1/3 = 9x - 27$

$3y - 1 = 3(9x - 27)$

$3y - 1 = 27x - 81$

$3y - 27x + 80 = 0$

Equation of the normal

4 | $y = 1 + x - x^2$ at point $(-2, -5)$

$dy/dx = 1 - 2x$

$dy/dx|_{-2} = 1 - 2(-2)$

$dy/dx = 5$

$m = 5 \quad x_1 = -2 \quad y_1 = -5$

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

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

$y + 5 = 5x + 10$

$y - 5x - 50$

Equation of a tangent

$m_1 m_2 = -1$

$m_2 = -1/5$

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

$5y + 25 = -x - 2$

$5y + x + 27 = 0$

equation of the normal

5. $y = 1/x$ at point $(3, 1/3)$

$dy/dx = -1/x^2$

$dy/dx|_3 = -1/3^2 = -1/9$

$m = -1/9 \quad x_1 = 3 \quad x_2 = 1/3$

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

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

$9y - 3 = x + 3$

$9y + x - 6 = 0$

equation of a tangent

$m_1 m_2 = -1$

$m_1 m_2 = -1$

$m_2 = -1/10$

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

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

$10y - 80 = -x + 2$

$10y + x - 82 = 0$

Equation of a normal

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

$dy/dx = 3x^2/2$

$dy/dx\,|_{-1} = \frac{3(-1)^2}{2} = 3/2$

$m = 3/2 \quad x_1 = -1 \quad y = -1/2$

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

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

$y + 1/2 = 3x/2 + 3/2$

$2y + 1 = 3x + 3$

$2y - 3x - 2 = 0$

Equation of the tangent

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

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

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

$6y + 4x + 3 + 4 = 0$

$6y + 4x + 7 = 0$

Dept:- Medcine and surgery
Matric no:- 19/mhs01/055
Course code:- Maths 104.

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

$dy/dx = 4x$

$dy/dx = 4(1)$

$dy/dx = 4$

$m = 4$

$m = 4, x = 1$

$x = 1, y_1 = 2$

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

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

$y = 4x + 2 = 0$

equation of a tangent

$m_1 m_2 = -1$

$m_1 = -1/4$

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

$4y - 8 = -x + 1$

$4y + x - 9 = 0$

Equation of a normal

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

$dy/dx = 6x - 2$

$dy/dx = 6(2) - 2$

$dy/dx = 10$

$m = 10$

$m_1 = 10 \quad x_1 = 2 \quad y_1 = 8$

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

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

$y - 10x + 12$

equation of a tangent