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19/mts01/428  
Medicine and Surgery

①  $y = 2x^2$  (1, 2)  
 $\frac{dy}{dx} = 4x$   
 $\frac{dy}{dx} = 4(1) = 4$   
 $m = 4$

eqn of tangent  
 $y - y_1 = m(x - x_1)$   
 $y - 2 = 4(x - 1)$   
 $y - 2 = 4x - 4$   
 $y - 4x = -4 + 2$   
 $y - 4x = -2$   
 $y - 4x + 2 = 0$  (normal)

2)  $y = 3x^2 - 2x$  (2, 8)  
 $\frac{dy}{dx} = 6x - 2$   
 $\frac{dy}{dx} = 6(2) - 2$   
 $= 12 - 2 = 10$   
 $m = 10$

eqn of tangent  
 $y - y_1 = \frac{1}{m}(x - x_1)$   
 $= \frac{1}{4}$   
 $y - 2 = -\frac{1}{4}(x - 1)$

$4y - 8 = -x + 1$   
 $4y + x = 1 + 8$   
 $4y + x - 9 = 0$   
 (eqn of tangent)

2)  $y = 3x^2 - 2x$  (2, 8)  
 $\frac{dy}{dx} = 6x - 2$   
 $6(2) - 2 = 10 = m$   
 eqn of tangent  
 $y - y_1 = m(x - x_1)$   
 $y - 8 = 10(x - 2)$   
 $y - 8 = 10x - 20$

$$2x^3$$

$$\frac{x^3}{2}$$

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

$$y - 10x = -12$$

$$y - 10x + 12 = 0$$

eqn of tangents  $\uparrow$

eqn of tangents

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

$$y - (-1) = -6(x - (-1))$$

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

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

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

$$y - y_1 = \frac{m_1}{m_1} (x - x_1)$$

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

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

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

$$10y - 80 = -1(x - 2)$$

$$2y + 3x + 13 = 0$$

eqn of tangents  $\uparrow$

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

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

$$10y + x - 82 = 0$$

eqn of normal  $\uparrow$

normal

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

$$a) y = \frac{x^3}{2}$$

$$(-1, -1/2)$$

$$y - (-1/2) = \frac{-1}{-6} (x - (-1))$$

$$y = 2 - x^3$$

$$2x^{-3}$$

$$-6x^{-4}$$

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

$$m = -6$$

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

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

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

$$= 6y - x + 2 = 0$$

eqn of normal

900

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

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

a)

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

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

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

$$y - \frac{1}{3} = -27 + 1/3$$

$$y - 900 + 80 = 0$$

$$3y - 2700 + 80 = 0$$

eqn of normal