## WEER 7 - Tutorial 1

## Tangents and Normals

1. Find the equation of the tangent and normal to the following curves at the points named.

(a) 
$$y = 2x^2 - x$$
 at  $(2, 6)$ 

(b) 
$$y = x^3 - 2x^2$$
 at  $(1, -1)$  (c)  $y = \frac{12}{12}$  at  $x = 3$ 

(c) 
$$y = \frac{12}{x}$$
 at  $x = 3$ 

Find the equation of the tangent to  $y = 2x^3 + 3x - 1$  at (1, -1).

Find the equations of the tangents to y = x(x-1) at the point where the curve cuts the x-axis.

4. Find the equation of the normal to the curve  $y = x^2$  at the point (2, 4). At what point does the normal cut the y-axis.

5. Find the equation of the tangent points.

to the graphs of the given functions at the given

(a) 
$$f(x) = (1-x)(x^2-1)^2$$
, (2,-9)

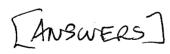
(b) 
$$f(x) = \frac{8}{\sqrt{x^2 + 6x}}$$
, (2,-2)

(c) 
$$f(x) = x\sqrt{2x^2 + 7}$$
, (3,15)

(d) 
$$f(x) = \left(\frac{x+1}{x-1}\right)^2$$
, (3,4)

6. Find the point on the curve  $y = x^3 - 6x^2 + 9x + 1$  at which the tangent is parallel to the line

7. Find the equation of the tangent to n2 +y2 - 2y at P= (1,+1)



## **Tangents and Normals**

1. (a) 
$$y = 7x - 8$$
,  $y = \frac{-x}{7} + \frac{44}{7}$  (b)  $y = -x$ ,  $y = x - 2$  (c)  $y = \frac{-4x}{3} + 8$ ,  $y = \frac{3x}{4} + \frac{7}{4}$ 

(c) 
$$y = \frac{-4x}{3} + 8$$
,  $y = \frac{3x}{4} + \frac{7}{4}$ 

2. 
$$y = 9x - 10$$

3. 
$$y = -x, y = x - 1$$

3. 
$$y = -x, y = x - 1$$
 4.  $y = \frac{-x}{4} + \frac{18}{4}$ ; (0,41)

5. (a) 
$$y = -33x + 57$$

(b) 
$$y = -\frac{5}{8}x + \frac{3}{4}$$

(c) 
$$y = \frac{43}{5}x - \frac{54}{5}$$

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