

## MA1 Homework 29

- The slope of the tangent to the curve  $y^3 - xy^2 = 4$  at the point where  $y = 2$  is  
A)  $-2$       B)  $\frac{1}{4}$       C)  $-\frac{1}{2}$       D)  $\frac{1}{2}$       E)  $2$
- The slope of the curve  $y^2 - xy - 3x = 1$  at the point  $(0, -1)$  is  
A)  $-1$       B)  $-2$       C)  $1$       D)  $2$       E)  $-3$
- Write the equation of the line tangent to the graph of  $f(x) = x^4 - 3x + 1$  at  $(1, -1)$ .
- Write the equation of the tangent line to the graph of  $f(x) = \frac{x^2 + 1}{x^2 - 1}$  at  $x = 2$ .
- Find all points on the curve  $y = \frac{x+1}{x-1}$  where the tangent line is parallel to  $2y + x = 10$ .
- Find the coordinates of all points on the graph of  $y = x^3 - 12x + 4$  where the tangent line is horizontal.
- Write the equation of the line tangent to the graph of  $y = \sin^2 x$  at the point where  $x = \frac{\pi}{3}$ .
- Write the equation of the normal to the graph of  $f(x) = 1 + \cos x$  at the point  $(\frac{\pi}{3}, \frac{3}{2})$ .
- Write the equation of the line tangent to the curve  $y = \tan^2 x$  at the point  $(\frac{\pi}{3}, 3)$ .
- Write the equation of the normal to the graph of  $f(x) = 3\sec^2 x$  at the point  $(\frac{\pi}{6}, 3)$ .
- The equation of the line tangent to  $f(x) = \frac{kx + 8}{k + x}$  at  $x = -2$  is  $y = x + 4$ . Find the value of  $k$ .