Mathematics I

## Worksheet 6

Name:

- 1. Use the definition to find the derivative of  $f(x) = x^2 + 3x$ .
- 2. Use the definition to find the derivative of  $f(x) = 4x^2 + 2x 3$ .

3. Use the definition to find the derivative of  $f(x) = \frac{3}{2x-1}$ .

4. Use the definition to find the derivative of  $f(x) = \sqrt{2x - 1}$ .

5. Find the equation of the line tangent to  $f(x) = \sqrt{2x-1}$  at x = 3.

- 6. Find the equation of the line normal to  $f(x) = \sqrt{2x-1}$  at x = 3.
- 7. Use the definition to prove f(x) = |x| is not differntiable at x = 0.
- 8. List any points at which the function below is not differentiable. Where is the derivative positive? Where is it negative? Sketch a graph of the derivative.

