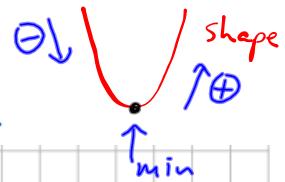


17. Given $f(x) = 4x^2 + 4x + 7$.

- (i) Find $f'(x)$.
- (ii) Hence, find the range of values of x for which
 - (a) $f(x)$ is increasing
 - (b) $f(x)$ is decreasing.



(i)

$$f'(x) = 8x + 4$$

(ii)

Increasing

Increasing

$$f'(x) > 0$$

$$8x + 4 > 0$$

$$2x + 1 > 0$$

$$2x > -1$$

$$x > -\frac{1}{2}$$

Decreasing

$$f'(x) < 0$$

Decreasing

$$x < -\frac{1}{2}$$