CHAPTER 2: QUADRATIC EQUATIONS

Paper 1

Solution to Question 5

(a) Area of plantation = 160

$$12x(x + 8) = 160$$
$$12x^2 + 96x - 160 = 0$$
$$3x^2 + 24x - 40 = 0$$

(b) (i) From (a), $3x^2 + 24x - 40 = 0$.
$a = 3$, $b = 24$, $c = -40$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$
$$= \frac{-24 \pm \sqrt{24^2 - 4(3)(-40)}}{2(3)}$$
$$= \frac{-24 \pm \sqrt{576 + 480}}{6}$$
$$= \frac{-24 + \sqrt{1\,056}}{6} \text{ or } \frac{-24 - \sqrt{1\,056}}{6}$$
$$= 1.416 \quad \text{or} \quad -9.416$$

Thus, the positive value of x is 1.416.

(ii) $NW = 12x - 2x$
$= 10x$
$= 10(1.416)$
$= 14.16$ m

$$NV = \sqrt{14.16^2 + 8^2}$$
$= 16.26$ m