



$$V(x) = (12 - 2x)(10 - 2x)(x)$$

$$0 < x < 5$$

$$96 = (120 - 24x - 20x + 4x^2)(x)$$

$$96 = (120 - 44x + 4x^2)(x)$$

$$96 = 4x^3 - 44x^2 + 120x$$

$$0 = 4x^3 - 44x^2 + 120x - 96$$

$$y = 4x^3 - 44x^2 + 120x - 96$$

$$x = 2$$

$$1.6$$

$$7.4$$

2.5 Complex Numbers

$$a + bi$$

Real Imaginary

$$3 + 2i$$

$$-4 - 7i$$

$$i = \sqrt{-1}$$

$$\sqrt{-16}$$

$$\sqrt{16 \cdot -1}$$

$$\sqrt{16} \sqrt{-1}$$

$$4i$$

$$i = \sqrt{-1}$$

$$i^2 = -1$$

$$i^3 = -i$$

$$i^4 = 1$$

$$i^5 = i = i^9 = i^{13}$$

$$i^6 = -1 = i^{10} = i^{14}$$

$$i^7 = -i = i^{11} = i^{15}$$

$$i^8 = 1 = i^{12} = i^{16}$$

$$i^{76} = 1$$

$$\begin{array}{r} 19 \text{ R } 0 \\ 4 \overline{) 76} \\ \underline{76} \end{array}$$

$$i^1 = i^{37}$$

$$\begin{array}{r} 9 \text{ R } 1 \\ 4 \overline{) 37} \\ \underline{-36} \\ 1 \end{array}$$

$$i^1 = i^{25}$$

$$\begin{array}{r} 6 \text{ R } 1 \\ 4 \overline{) 25} \\ \underline{24} \\ 1 \end{array}$$

$$i^2 = -1 \quad i^{26}$$

$$\begin{array}{r} 6 \text{ R } 2 \\ 4 \overline{) 26} \\ \underline{24} \\ 2 \end{array}$$

$$i^3 = -i \quad i^{63}$$

$$\begin{array}{r} 15 \text{ R } 3 \\ 4 \overline{) 63} \\ \underline{4} \\ 23 \\ \underline{-20} \\ 3 \end{array}$$

$$(2 + 7i) + (-3 + 5i)$$

$$-1 + 12i$$

$$(3 + 2i)(4 - 5i)$$

$$12 - 15i + 8i - 10i^2$$

$$12 - 7i - 10(-1)$$

$$22 - 7i$$

$$i^2 = -1$$

Conjugate

$$\begin{array}{cc} 2+3i & 2-3i \\ -4-7i & -4+7i \end{array}$$

$$\frac{(2+5i)}{(3-2i)} \cdot \frac{(3+2i)}{(3+2i)}$$

$$\frac{6+19i+10i^2}{9+6i-6i-4i^2}$$

$$\frac{-4+19i}{13}$$

$$\sqrt{\frac{10+6i}{4} \left\{ \begin{array}{l} \frac{10+6i}{2} \\ 5+3i \end{array} \right.}$$

$$\frac{10+7i}{2}$$

$$5+\frac{7i}{2}$$

