(e) $40(x+21) = 32(15-x)$

$40x + 840 = 480 - 32x$

$40x + 32x = 480 - 840$

$72x = -360$

$\boxed{x = -5}$

7. $v = v_0 + at$

Given v, a, t. Want v_0

$v - at = v_0$

Units must be consistent:

$$v = 90 \frac{\text{km}}{\text{h}} \times \frac{1000\,\text{m}}{1\,\text{km}} \times \frac{1\,\text{h}}{3600\,\text{s}} = 25\ \text{m/s}$$

$v_0 = v - at$

$v_0 = 25\,\text{m/s} - (3.0\,\text{m/s}^2)(5.0\,\text{s})$

$v_0 = 25\,\text{m/s} - 15\,\text{m/s} = \boxed{10\ \text{m/s}}$

8. (a) $x^2 - 4x + 4 = 0$

$$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a} = \frac{-(-4) \pm \sqrt{(-4)^2 - 4(1)(4)}}{2(1)}$$

$$= \frac{4 \pm \sqrt{16-16}}{2} = \frac{4 \pm 0}{2} = \boxed{2}$$

(b) $3x^2 - 2x - 1 = 0$

$$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a} = \frac{-(-2) \pm \sqrt{(-2)^2 - 4(3)(-1)}}{2(3)}$$

$$= \frac{2 \pm \sqrt{4+12}}{6} = \frac{2 \pm \sqrt{16}}{6}$$

$$= \frac{2 \pm 4}{6} : \quad \frac{2+4}{6} = 1$$

$$\frac{2-4}{6} = -\frac{2}{6} = -\frac{1}{3}$$

$\boxed{x = 1, -\frac{1}{3}}$